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CONTENTS.

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT.

TWO ADDRESSES on the Importance of Industrial Medicine to the Community. Papers read at a discussion on this subject held at the Section of Preventive Medicine with Industrial Diseases of the British Medical Association. I. By EDGAR LEIGH COLLIS, M.A., M.D., Talbot Prof. of Preventive Medicine, Univ. of Wales.—II. By Sir KENNETH GOADBY, K.B.E., M.R.C.S., D.P.H., Referee for Industrial Poisoning, Home Office, London District.—(*Illustrated*) 487

ORIGINAL ARTICLES.

The After-effects of Epidemic Encephalitis in Children. By DONALD PATERSON, M.B., B.Ch., M.R.C.P., Medical Registrar, Hospital for Sick Children, Great Ormond-street; and J. C. SPENCE, *M.C.*, M.D., M.R.C.P., John and Temple Research Fellow, Children's Department, St. Thomas's Hospital..... 491

Effect of Culture-Media upon Agglutination of Meningococci. By I. WALKER HALL, M.D., Professor of Pathology and Bacteriology, University of Bristol; and G. E. TILSLEY, M.R.C.S., L.R.C.P., formerly Demonstrator of Pathology, University of Bristol.—(*Illustrated*) 494

Protista and Disease: A Preliminary Note. By J. JACKSON CLARKE, M.B., F.R.C.S., Senior Surgeon to the Hampstead and North-West London and Royal National Orthopædic Hospitals.—(*Illustrated*)..... 495

The Value of the Complement-fixation Test in Pulmonary Tuberculosis. A Report to the Medical Research Council from the Institute of Pathology and Research, St. Mary's Hospital. By A. LISLE PUNCH, M.B., M.R.C.P., Assistant Physician to the Brompton Hospital. Introductory Note by ALEXANDER FLEMING, F.R.C.S..... 497

Development of Medical Science in Vienna. By Dr. MAX NEUBURGER, Professor of History of Medicine at the University of Vienna..... 536

CLINICAL NOTES:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

Two Probable Cases of Ambulatory Encephalitis Lethargica. By C. EUSTACE WILLIAMS, M.R.C.S., L.D.S. 499

A Foreign Body in the Knee-joint for 13 Years. By ALFRED C. SHARP, M.D.—(*Illustrated*) 499

THE BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT NEWCASTLE-ON-TYNE.

SECTION OF PREVENTIVE MEDICINE WITH INDUSTRIAL DISEASES: The Effect of Health Legislation on the Health of the People.—Importance of Industrial Medicine to the Community 500

SECTION OF OBSTETRICS AND GYNÆCOLOGY: Rôle of Cæsarean Section in Midwifery.—Treatment of Advanced Malignant Disease of the Cervix.—Neurasthenic Element in Gynæcology.—Curettage and the Treatment of Uterine Hæmorrhage.—Position of the Medical Practitioner in Cases of Procured Abortion 502

SECTION OF OPHTHALMOLOGY: Causes and Prevention of Blindness.—Treatment of Corneal Ulcers 510

REVIEWS AND NOTICES OF BOOKS.

The Psychology of Day-dreams. By Dr. J. Varendonck 512

Human Physiology. By Prof. Luigi Luciani..... 513

Regional Anatomy. By T. B. Johnston, M.B., Ch.B..... 513

Diseases of the Lungs. Second edition. By Adolf Bacmeister..... 513

La Médecine. By G. H. Roger 514

Roentgen Interpretation. Second edition. By G. W. Holmes, M.D., and H. E. Ruggles, M.D..... 514

Dosierungstafeln für die Röntgentherapie. By Friedrich Voltz..... 514

NEW INVENTIONS.

A New Aero-urethroscope (Mr. J. Swift Joly).—(*Illustrated*) 514

LEADING ARTICLES.

INDUSTRIAL MEDICINE..... 515

OPHTHALMIA NEONATORUM... 516

THE COMBINED TREATMENT OF MALIGNANT DISEASE 516

THE CENSUS OF 1921..... 517

ANNOTATIONS.

The Opium Traffic and the League of Nations..... 518

Fixation of Complement in Tuberculosis 518

Dental Decay in the Young... 519

The Swimming Bath and Catarrhal Otitis 519

The Visceral Sensory Nervous System..... 520

The Famine in Russia: An International Conference... 520

Late Effects of Gassing or Tuberculosis ?..... 521

German Naval Hygiene 521

Rat Destruction and Plague in India..... 522

The Peril of the Air 522

Syphilis in the Negro..... 523

The Maudsley Hospital 523

Experiments on Living Animals..... 523

SPECIAL ARTICLES.

Health of London School Children: Report for 1920 of the School Medical Officer, L.C.C..... 524

Tuberculosis 525

Vienna 526

Roumania..... 527

The Horsley Memorial 527

PUBLIC HEALTH SERVICES.

Size of Panel Lists..... 528

Consultant Service in Wales 528

Canal Boat Hygiene 528

Annual Reports of Medical Officers of Health: Dewsbury, Tottenham, Chelsea, Llanelly 528

School Medical Inspection: Warrington 529

Vital Statistics of London during July, 1921 530

Analysis of Sickness and Mortality Statistics in London during July, 1921.... 530

OBITUARY.

Herbert Edmund Cuff, O.B.E., M.D., F.R.C.S., Principal Medical Officer, Metropolitan Asylums Board 532

John Warrington Haward, F.R.C.S., Consulting Surgeon to St. George's Hospital..... 532

THE SERVICES.

Royal Naval Medical Service 531

Royal Army Medical Corps.... 531

India and the Indian Medical Service 531

Deaths in the Services 531

CORRESPONDENCE.

Anæsthesia with Nitrous Oxide and Oxygen under Pressure (Mr. E. W. Morris) 533

The Supposed External Effects of Human Vision (Dr. Ian D. Suttie)..... 533

The Objective Study of Neurosis (Dr. Paul Bousfield)..... 533

Winter Resort for Chronic Rheumatism..... 540

MEDICAL NEWS.

Manchester and Salford Radium Institute 500

Cancer Rates in Edinburgh and Manchester..... 517

Radcliffe Infirmary, Oxford... 523

Water-supply for Caravanners 524

Devonshire Hospital and Buxton Bath Charity..... 527

Literary Intelligence 531

University of Manchester..... 534

University College Hospital Medical School..... 534

"Our Day" 534

The New Harwich-Zeebrugge Route 534

Training for Disabled Nurses 534

Health Week 534

Donations and Bequests 534

Whooping-cough Epidemic at St. Kilda..... 534

Salford Milk-supply 535

Royal Medical Benevolent Fund 535

NOTES, SHORT COMMENTS, &c.

University Graduates 539

An Insurance Broker 539

Two Needless Deaths..... 539

The Revenue from Patent Medicines..... 539

St. Thomas's Hospital Samaritan Fund 539

The Ætiology of Typhus 540

Society for Constructive Birth Control 540

War Disablement Pensions... 540

Sanitation in Flanders..... 540

Dangerous Drugs Act, 1920..... 540

Foreign Postage Rate..... 540

Orthography in Uganda..... 540

The Airman's Physique..... 540

Medical Diary 535

Appointments 535

Vacancies..... 535

Births, Marriages, and Deaths..... 536

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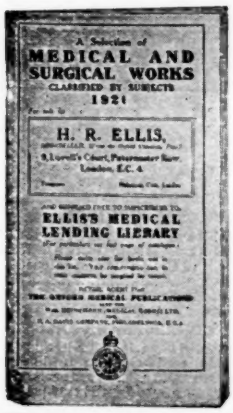

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THE stages of scientific progress are represented by thought, then by research resulting in knowledge, and finally by action. Where for any reason, as in the art of medicine, action based on empiricism has come first into existence, new knowledge based on research frequently finds some vested interest opposing action on new lines, or at least some vis inertiæ resulting from innate conservatism. New knowledge in medicine has recently been acquired through research, and practice is gradually changing accordingly. But in no branch is thought, research, and knowledge less hampered by action than in that of industrial medicine, because there is little or no action, and in no branch, possibly for that very reason, has the trend of thought been advancing more rapidly.

MEDICAL SERVICE: CHANGE IN THE OUTLOOK.

During the past 20 years there has been a change in the outlook of medical service. Previously treatment of the sick was the first consideration, and the public only came in contact with the profession in case of illness. Questions affecting the maintenance of health were impersonal and left to the public services concerned with water-supply, drainage, disposal of refuse, and the sale of wholesome food. More recently, however, the personal note has been sounded in relation to maternity and infant welfare, school medical service, tuberculosis, and venereal clinics. Notification of births has provided the information upon which infant welfare work is being constructed. Schools, by gathering together children for educational purposes, provide the opportunity for medical inspection of each child. Notification of tuberculosis again is of value for establishing, through the work of health visitors, personal touch with contacts—the preventive side of the tuberculosis campaign. Here adult life is just touched; but, generally speaking, means have yet to be found for bringing preventive medicine into direct personal contact with the adult. For this purpose industry, which gathers adults together, provides the means. The points for consideration are, whether the community would benefit if industry shouldered this responsibility, and whether industry itself would benefit by such action. The benefit to the community is closely interlocked with the benefit to industry, since the community is composed of constituent groups, among which the industrial group (using the word industrial in its widest sense) forms the greatest part. And if the industrial part of the adult population were sound in health there would not be need for much else.

The state of health of the industrial part of the community is the first thing to be ascertained. Appeal on the matter may be made to different types of data. First come the recent disclosures of the army recruiting examinations. Here only 36 per cent. of the male adults of age to bear arms were classed as Grade 1; but the numbers attaining this standard were found to vary widely according to occupation; the miner and the agriculturist provided a far higher proportion than other groups of industrial workers. Next, appeal may be made to mortality statistics. Here we find the agricultural labourer with a comparative mortality figure of 470; a standard set by the lowly paid and poorly housed agriculturist who works long hours is surely not too high to aim at. Yet the comparative mortality for printers is 773; for tailors, 799; for cotton operatives, 811; for shoemakers, 820; for iron and steel manufacturers, 837; for Lancashire coalminers, 941; for edged toolmakers, 1010; for costermongers, 1507; and for general labourers, 2301. Thirdly, age distribution gives us some information. Out of 1000 occupied agriculturists 225 are aged 55 and over; out of 1000 cotton operatives, 69; out of 1000 printers, 66; out of 1000 coalminers, 75; out of 1000 metal workers, 98; and in the building trades, 121.

None of these sets of data indicates a satisfactory state of affairs, and each brings out marked differences in different occupations. There is, then, a wide field of work before industrial medicine to establish the why and wherefore of these differences. There is an inclination to associate the subject of industrial medicine only with occupational diseases, such as poisoning from lead, mercury, or phosphorus, anthrax, miner's nystagmus, writer's cramp, or caisson disease. These peculiarities of industrial disease are important, both in themselves and in drawing public attention to the influence of occupation upon health. Moreover, through them the guide-post of industrial hygiene has been established—the guide-post which directs attention to prevention rather than to cure. The scope of work has enlarged much beyond the boundaries of occupational disease, but the guide-post is the same. To-day industrial medicine is recognised to be directly aimed at preventing disease and maintaining health. In industry more easily than elsewhere in the community can the balance be cast between the debit of sickness and inefficiency and the credit of health and productivity; this matter will be referred to again later. Here there exists a direct economic interest in maintaining health, an interest which up to the present has hardly been perceived by industry. Nor does the matter end here, for opinion is hardening towards expectation of fulfilment of a definite duty by those who employ labour. The State is now undertaking work upon which large sums of money are being spent in order to bring up from birth to adolescence healthy individuals. Those who thereafter employ these persons have to thank the State that this supply of labour is at their disposal and must in their turn maintain it in health. This opinion finds its expression in Workmen's Compensation Acts and schemes of unemployment benefit. The tendency in the past has been to shift the burden of responsibility on to some insurance agency; but the latest compensation scheme under the Workmen's Compensation (Silicosis) Act, 1918, places upon industry—the refractories industry in this case—the responsibility of shouldering its own insurance. Action on these lines will probably prove a direct incentive to industry to lighten the liability by actively pursuing preventive measures.

THE PERSONAL NOTE.

Allusion has already been made to the personal note in the application of modern preventive medicine. This note is not to be perceived to-day in factory life. Yet the community as a whole needs it. The State up to adolescent life is striving to instil the principles of health, and its efforts are yearly increasing in effectiveness. Then the youth passes into some occupation where his master, as judged by social standing and worldly wealth stands far above the school teacher, and is presumably more worthy of respect. But now the youth finds no attention paid to health and its maintenance. Is it a matter for surprise that he disregards the precepts of his former teachers as something only concerned with boyhood, something not needed in manhood, something it is manly to despise? There are here immense possibilities in industry. Fresh air, sunlight, cleanliness, and wholesome food are necessary to efficiency in the work of adults just as they are for children. Moreover, a standard set in these matters by the all-admired capitalist who rules industry would spread from the factory to the home.

To-day the reverse holds good; the coalminer carries home the colour-bar of his occupation, and no Sherlock Holmes is needed to recognise the cement-maker, the stoker, the cotton operative, the dock labourer, the tanner, or the man from the rolling mills on his way to carry the grime of his work to his artisan dwelling. Example, indeed, is stronger than precept. Not until tidiness, cleanliness, and fresh air, which are the breeding ground of good manners and good thought, are to be found in British industries can we expect to find them in British homes. Here, again, a duty is owed by industry to the community, and a debt the payment of which is long overdue. The community, being largely composed of industrial workers, must benefit by any action which benefits industry, and consideration of the importance of industrial medicine economically to industry must indicate at the same time its economic importance to the community. A few short sums in arithmetic will give help.

LABOUR TURNOVER AND LOST TIME.

A heavy economic burden upon employers and employed has now been recognised in the drift of workers from one place of employment to another. Employers suffer because workers newly engaged experience more accidents and suffer more sickness than the more permanent staff; they are also less productive units. Various estimates have been made of the cost of changing a worker, some place it as high as £5. Let us err on the safe side and put it at £2 10*s*. The worker himself, on changing employment, may be out of work for a while, then, when he does get work, at first he earns less and is more liable to sickness and accidents. He also loses not less than the employers, say £2 10*s*. on the average. That is to say, every change costs industry not less than £5. Labour turnover in some cases, according to various calculations made in America and in this country, has been placed at 400 per cent. Let us be content to place it at 100 per cent., which means that to maintain a personnel of 1000 workers at full strength every year 1000 workers require to be engaged to replace those who have left. In our factories and workshops alone are some eight million workers; then there are over a million miners with a similar turnover. These, together with those employed on the land, on the railways, and in transport service, as well as shop assistants, clerks, and the mercantile marine, make up not less than 20 million persons. A labour turnover on this total of 100 per cent. at £5 per head comes to 100 million pounds a year. This high labour turnover is unnecessary, as has been shown both in the United States and here; it falls to 30 per cent. where medical supervision of entrants and hygienic conditions of employment exist. This would mean a saving of 70 million pounds a year.

It has been established by careful inquiry that the underlying cause at the back of lost time is either certificated sickness or that condition of lowered health which precedes sickness. Various estimates of lost time have been made. In some cases it amounts to 20 per cent. of total possible hours; but when health conditions are favourable it may fall below 4 per cent. An average of 10 per cent. probably is not excessive for half the employed population; while 4 per cent. may be taken for the other half. Total possible working hours each year may be placed at a round figure of 2000. The loss of 10 per cent. means 200 hours, which at a wage of 1*s*. per hour comes to £10. The loss of 4 per cent. means 80 hours, which comes to £4. Ten million persons at £10 means £100,000,000. Ten millions at £4 means £40,000,000. The difference, £60,000,000, represents what may be easily attained by medical supervision in industry. On these two items alone there is a possible saving of £130,000,000 a year.

INDUSTRIAL CONVALESCENCE.

Another valuable contribution, connected with recovery from sickness, can still be made by industry to the community with benefit to industry itself. Sickness among industrial workers, whether due to accident or ill-health, is liable to be unduly prolonged for two reasons. In the first place, weekly wage earners tend to be unduly anxious about themselves and their symptoms, and unduly anxious lest if their invalidity is prolonged their place may be filled up. This anxiety tends at once to delay recovery and also to induce them to attempt to resume full-time employment before they are ready, when a second breakdown ensues. In the second place, these persons are in receipt of either compensation pay or sickness allowance; both are forfeited directly they start upon work of any kind. Convalescence can be expedited both mentally and physically by graduated activity of an interesting nature, and the best form of interest is remuneration for work done, which is to-day precisely the form of activity prohibited for the industrial convalescent. The result is that to-day enormous sums of money, which there are no means for estimating accurately, are expended in retarding convalescence. Instances of this kind of case can readily be recalled; the poisoned hand or injured limb, cured so far as the surgeon is concerned, for which short-time light employment is needed to restore functional usefulness; the consumptive discharged from sanatorium, but quite unfit to resume full factory hours; the nervous heart case for whom graduated exercise up slopes only gives opportunity for concentrating attention on the vagaries of cardiac behaviour to the detriment of convalescence; the dyspeptic who needs oxygenation resulting from exercise to rectify his gastric peristalsis; the great class of neurasthenias often called debility and suspected to be laziness, which after initial rest urgently need a period of short-time work. The list could easily be lengthened indefinitely. Each and all require—what to-day they cannot get—a period of short-time remunerative activity.

The permanently maimed in industry—to-day cast on to the scrapheap as unemployable, to be a permanent charge on industry or on the rates—still remain for consideration. Holman has estimated that annually 250,000 workers are permanently thrown out of employment through accident or preventable disease in the United States. There are no accurate statistics for this country, but a census taken in Wales in 1918 revealed that one in every 810 civilians had lost one or more limbs, and that in the industrial district of South Wales the proportion was one in every 695. Application of the former figure to the population of the United Kingdom gives a total of limbless civilians at any time of over 58,000. Few persons are ever maimed so that they do not retain some productive capacity. The Ministry of Pensions in this country—and similar evidence is forthcoming from France, America, and other countries—have shown what can be done through industrial re-education for maimed soldiers. Eighty per cent. of war cripples can be trained to carry on a trade without special equipment. The need for continuance of this work for those maimed while earning their livelihood—for assuredly peace has its victims no less than war—is clear. The duty, and also the benefit resulting, lie with industry in whose service the disability is sustained, just as the State has undertaken the duty for those injured in her service.

DEBIT AND CREDIT.

The proposition is put forward that industrial medicine properly applied can effect a saving each year on labour turnover of from 60 to 70 millions, on lost time of 50 to 60 millions, and through industrial convalescence of many millions more. Put the total at £140,000,000 on a conservative estimate. There are to-day something over 40,000 doctors in the kingdom; the cost, if industry employed half the profession and gave each doctor £2000 a year for whole-time work, would amount to £40,000,000 a year, leaving a handsome balance of £100,000,000 a year. Such wholesale engagement of the profession is not proposed, and indeed is not needed. The figures are only instanced to demonstrate that industry by developing industrial medicine has the promise of great profit while it fulfils a great social service.

The trend of thought to-day is against nationalisation of industries, but industries must realise that while maintaining their independence they take over at the same time certain responsibilities as regards those employed which under nationalisation would be undertaken by the State. Recognition of these responsibilities and taking them up would entrench the position of industrial independence. Failure in this matter, quite apart from economic waste, must sooner or later cause those employed to demand reconstruction of modern industrial organisation. Such reconstruction might seriously dislocate the community with sufferings as a consequence such as Russia is now experiencing, with no commensurate advantage. To-day our profession stands too much aloof from such thoughts, and does not do enough to impress upon industry that there is a science of medical sociology the principles of which, if applied to labour unrest, would give results more certain, more sure, and more enduring than all the remedies evolved from the inner consciousness of political economists who may know somewhat of politics but know nothing of the economies of the human machine, and who give lip service only to the truth that a healthy body is necessary for a healthy mind. In very truth the community to-day greatly needs an industrial medical service; it needs it in the interests of health; it needs it in the interests of economy; it needs it in the interests of industrial efficiency; it needs it in the interests of social contentment.

II.

By SIR KENNETH GOADBY, K.B.E., M.R.C.S., D.P.H. CANTAB.,

REFEREE FOR INDUSTRIAL POISONING, HOME OFFICE, LONDON DISTRICT.

DURING inquiry into the causes of the disabilities suffered in many industrial processes, more especially those in which lead is used or manufactured, one is constantly hampered by the perfectly frank and often good-willed obstruction offered by both employer and employee to innovations directed towards the improvement of health conditions. On the other hand, extreme measures may be proposed to combat an evil recognised by its effects, though its actual cause may be little understood, and the somewhat tempting but unscientific and uneconomical attitude expressed in the phrase, "I cannot away with it," is easily adopted. An instance of this no doubt perfectly genuine but misguided frame of mind is to be found in the controversy at present raging regarding the suggested prohibition of the use of white lead as a pigment in the arts and manufactures. It is well known that lead poisoning exists amongst the users of lead, and that its incidence has diminished, following the reduction of lead dust in dangerous lead processes; yet in an extraordinary document bearing evidence of the hand of the acute propagandist—the so-called questionnaire emanating from the International Labour Bureau at Geneva—dust as a cause of poisoning in the painting trade is dismissed with an almost contemptuous negative. Reference has only to be made to the excellent results obtained through the special Home Office rules in the white lead manufacture, in potteries, and in other trades—in the administrative application of which rules Prof. Collis had no small share—to see the fallacy of disregarding dust as the most important vehicle by which lead poisoning in industry is produced. In these industries the use of the deleterious material is still continued with comparative safety in processes in which it has been possible to reduce the amount of dust produced within innocuous limits; the quantity of soluble lead in pottery glaze has been reduced, but it is essential to point out that the glaze is still obtained by means of lead silicate, although the application is modified, in that the fritting or combining of the lead with the silica is carried out before the glaze is applied to the ware, in lieu of the formation of the lead silicate from a soluble salt of lead during the process of firing the ware; it is therefore not fair to argue from the diminution of the quantity of soluble lead present in a glaze that there is a diminution in the quantity of soluble lead present in a paint. This by the way. Prof. Collis has emphasised the necessity of the industrial individual acquiring a competent knowledge of the danger of any deleterious process in which he is engaged, and I would further add that as in microbic disease individual susceptibility varies within wide limits, so also the resistance towards varieties of industrial poisoning shows wide variations of tolerance and intolerance.

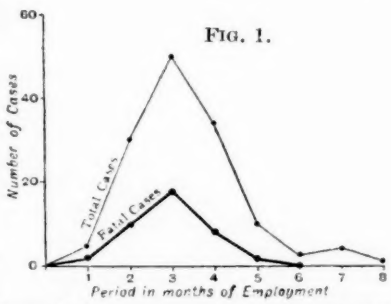
LEAD POISONING.

Prof. Collis has shown a curve (Fig. 1) demonstrating the presence of susceptibility and immunity towards T.N.T. (*Journal of the Royal Society of Medicine*, 1916), and in a recent paper (Royal Society of Arts, June, 1921) I was able to show that the largest incidence of lead absorption amongst workers in white lead factories occurs within the first six months of their exposure, and that by careful supervision, alteration of employment and suitable treatment, such susceptible persons finally obtain a tolerance which enables them to work over long periods without disability (Fig. 2). This important factor is well brought out by Prof. Collis's suggestion of a period of industrial convalescence for persons who have suffered from any type of industrial disease; at present the factory surgeon is often handicapped by the absence of facilities to carry out such procedure. Lead poisoning bulks largely as an industrial disease, but its statistics are sometimes regarded with some degree of suspicion, particularly as regards those trades in which lead poisoning is not a certifiable disease, and in which no special rules or medical inspection is extant. The statistics of lead poisoning may thus be divided into two categories:—

1. Those in which the case is seen by a certifying surgeon—a surgeon appointed with a special knowledge of the symptoms of the disease, and practising in the particular district in which the diseases are likely to occur. I regard the suggestion that the certifying surgeon should be superseded by a whole-time official as not in the highest interests of the working class population. A surgeon practising in a district is better acquainted with the general run of disease in that district than a whole-time officer not engaged in private practice, who has not the same opportunity to estimate the value of certain symptoms common to both lead poisoning and other diseases.

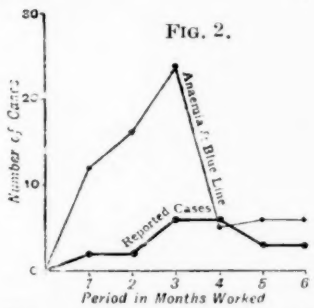
T.N.T. Poisoning.

FIG. 1.



Susceptibility and immunity. Time of onset and fatal cases according to number of months worked (after Collis).

FIG. 2.



Final development of tolerance. Extracted from factory medical registers, 1911–1921. Upper curve shows number exhibiting signs of absorption without definite symptoms of poisoning.

Notification and certification by certifying surgeons is, on the whole, extremely satisfactory. As medical referee for industrial poisoning in the County of London I have a number of cases referred to me in which the certificate of the certifying surgeon is appealed against, and I have rarely found myself in disagreement with the findings of the certifying surgeon. This class of statistics may therefore be regarded as satisfactory.

2. Those arising in industrial processes not certifiable by the certifying surgeon in the district. Such cases are frequently seen by medical men who are unfamiliar with the symptoms of lead poisoning and who rely for diagnosis (not surprisingly) upon the history and occupation of the sufferer who seeks their advice. Further, the opportunities for obtaining knowledge on the differential diagnosis of many types of industrial disease is denied to a large number of men who annually qualify, and who have unfortunately little opportunity at hospital of studying the symptoms of occupational illnesses. This lack of knowledge may at times lead to extravagant and absurd statements, such as that made to the Departmental Committee on lead poisoning amongst painters; a noted physicist, told by his doctor that he had suffered from lead colic, thereupon concluded that the spectroscopic lines seen in drying paint vapour must be volatile lead, and committed himself to that opinion.

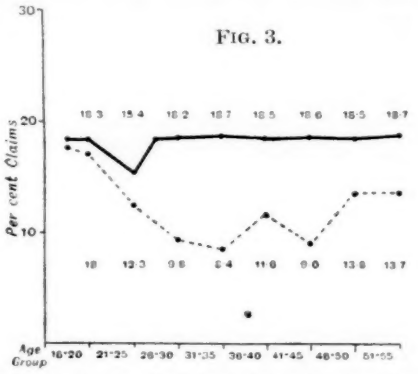
THE HEALTH OF PAINTERS.

The health of painters, the diseases from which they suffer, the processes of their industry that lead to disease, comprise a much-debated problem of industrial medicine at the present time, and I wish to draw attention to some points connected with the question. Complete agreement exists that dry rubbing down of old or new paint may produce lead poisoning and constitutes the painter's main risk. To obviate this risk one school of opinion suggests the total prohibition of lead as a paint. Another class of opinion argues that for one risk that can be easily obviated it is uneconomic to prohibit the use of materials whose manufacture affords occupation to a large class of industrial workers and for which there is no adequate substitute. The whole question, therefore, becomes one of industrial medicine.

Painting is an operation so widely performed that many medical men are acquainted with the curious symptoms following the inhalation of the vapours given off from drying paint. The most delicate tests applied to these vapours fail to show the presence of any lead, yet symptoms closely resembling lead poisoning are produced in susceptible persons, and there is little doubt that a large number of such cases are returned as painter's colic—hence lead poisoning; there is every likelihood that this class of case will increase, as since the war there has been a wholesale tendency to replace turpentine with various other forms of volatile dryers, some of them exceedingly poisonous. The attention of medical practitioners as a whole requires direction towards such forms of poisoning; clinical observation and careful inquiry as to the facts would lead to much useful information.

I have recently had the opportunity of studying the figures of illness suffered by painters belonging to the sickness benefit branch of the Hearts of Oak, and I have taken out the numbers of cases of various types of disease under four headings—respiratory, alimentary, muscular, and nervous. These headings are

FIG. 3.



Sickness benefit in the Hearts of Oak, 1919, showing fewer claims from painters (lower curve) in proportion to general group (upper curve).

groups obtained from the short list of the Registrar-General. The respiratory diseases comprise influenza, phthisis, bronchitis, pneumonia, and other diseases of the respiratory organs. The alimentary diseases are colic, diarrhœa, dyspepsia, enteritis, gastro-enteritis, gastric catarrh, gastritis, hæmorrhoids, gastric fever, and gastralgia. Under the heading of muscular diseases I have placed rheumatism and rheumatic fever, myalgia, lumbago, gout, and ague as being likely in the painting trade to be associated together under the general term of "rheumatism." In the nervous division are included neuritis, neurasthenia, neurosis, and vertigo.

From the accompanying table it will be seen that the chief diseases from which the painter suffers are those of the respiratory tract. Now, except in dry rubbing down, the painter is not exposed to the inhalation of dust. The recent admirable paper by Prof. H. E. Armstrong and Mr. C. A. Klein (*Journal of the Royal Society of Arts*, July, 1921) has shown that the droplets of paint splashing are larger than any size likely to be inhaled, and that the amount of actual splashing which reaches the face is minimal and not likely to subject the painter to an intake of more than 0·7 milligramme of lead per working day of eight hours if he is engaged the whole day in stippling, and the high incidence of respiratory disease is possibly associated with the inhalation of vapours of the drying paint. More particularly is this likely to be the case as in the splashing produced in painting a vertical surface practically no splashes come beyond 15 inches from the foot of the wall. Most paint is now sold ready-made, and very little so-called "breaking down" of the dry white lead is done. It is interesting, further, to note that in this group of painters in the Hearts of Oak the actual claims for sickness over the various age-groups is less amongst

TABLE SHOWING PERCENTAGE OF CLAIMS FOR DISEASE IN PAINTERS COMPARED WITH ALL CAUSES.
(*From Hearts of Oak Figures*, 1920.)

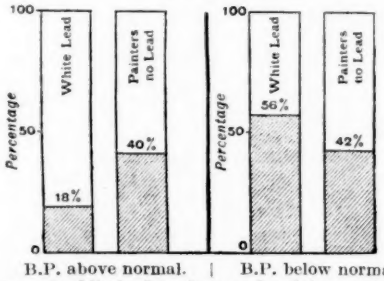
Group of disease.	Age.											Total.
	16 to 20	21 to 25	26 to 30	31 to 35	36 to 40	41 to 45	46 to 50	51 to 55	56 to 60	61 to 65	66 to 70	
Respiratory	25	21·7	25·0	25·9	38·8	25·0	26·6	33·3	35·3	50·0	57·1	—
Alimentary	12·5	4·3	15·5	7·4	2·8	8·0	7·5	6·0	0·0	0·0	0·0	—
Muscular	6·2	11·5	12·5	22·0	13·9	12·5	20·0	36·0	11·8	0·0	0·0	—
Nervous	6·2	4·3	3·1	0·0	0·0	0·0	1·5	5·6	11·7	0·0	0·0	—
All causes..	16	23	32	27	36	24	30	18	17	8	7	238
Exposed to risk	89	187	325	323	312	266	218	131	95	41	26	2013

painters than that of the total number of persons claiming benefit. (Fig. 3.) The absence of high incidence of disease of a type which might be attributable to lead—namely, those in the alimentary and nervous sections—together with the high incidence in the respiratory type, is a little difficult to reconcile with the supposedly high incidence of lead poisoning amongst painters as a whole, as it would seem that if lead poisoning were a serious feature in the painting trade it should show in a block of figures of this type.

WHITE LEAD WORKERS.

There is, therefore, an issue between these two points of view, and the community is entitled to inquire of exponents of industrial medicine the proper solution of such a dilemma. Recent work has to some extent suggested the direction in which this may be sought. Comparison of the disease occurring in white lead workers who work in lead alone, uncomplicated by the dust of angular particles, shows that while respiratory diseases are common in potters, who inhale flint dust and lead together, it is not so common amongst white lead workers who only inhale lead dust. The material of which the painter makes use is soft and not angular, and it is well known that persons exposed to baryta and other types of dust without angular particles do not show a high incidence of respiratory disease. The painter, on the other hand, is exposed to a risk

FIG. 4.



Percentage of white lead workers and painters not using lead paint which shows blood pressures above and below normal for age 20–60.

to which neither of the other classes is exposed—namely, the inhalation of fumes of volatile products (turpentine and turpentine substitutes) which are known to produce respiratory effects in susceptible animals. In a recent examination of white lead workers and painters the average blood pressure of the painters in the same age-groups was found to be higher than that of lead workers. (Fig. 4.) This is a suggestive point; the constant inhalation of vapours of volatile fluids, among which are compounds of the benzine and paraffin series, is conducive to renal affection and high arterial tension. The higher arterial tension of painters is the more striking in that painter's work is much less severe, less muscular effort being required in using a paint brush than in carrying half-hundredweights of lead or huge baskets filled with wet tan.

One further statistical fact, culled from the 1911 figures of the Registrar-General's report, appears to corroborate the growing opinion that it is in the volatile portions of the paint rather than in its solid constituents that one must look for the cause of the disease. The birth-rate tables per 1000 males aged under 55 years gives a birth-rate per 1000 for the painters as 155, being actually higher than that of clergymen, barristers, solicitors, law clerks, farmers, and graziers (148), whilst the figure for all males is 162; such figures do not suggest severe lead absorption.

This short epitome of some of the facts of the painting trade controversy supports by a specific instance the difficulties underlying the problems of occupational disease outlined by the opener of the discussion, and emphasises the necessity of strictly scientific methods in dealing with problems of industrial medicine.

THE AFTER-EFFECTS OF EPIDEMIC ENCEPHALITIS IN CHILDREN.

BY DONALD PATERSON, M.B., B.CH. EDIN., M.R.C.P. LOND.,
MEDICAL REGISTRAR, HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET;
AND
J. C. SPENCE, *M.C.*, M.D. DURH., M.R.C.P. LOND.,
JOHN AND TEMPLE RESEARCH FELLOW, CHILDREN'S DEPARTMENT, ST. THOMAS'S HOSPITAL.

THE investigation, which forms the subject of this paper, was undertaken for the purpose of inquiry into the subsequent fate of such cases of epidemic encephalitis in children as had come under our notice in hospital during the early stages of the disease. It arose from a realisation of the difficulty in offering an accurate prognosis in this disease, and in answering the question, which invariably arose, as to what chance of complete recovery on the one hand, or of mental and physical impairment on the other, might be expected to follow it. This question was apparently present in the minds of those observers who, in the early days of the recent epidemic, were describing the disease. MacNalty,[1] in the Local Government Board report on Encephalitis Lethargica (1918), warned his readers that until more evidence was available a guarded opinion should be expressed as to the risks of after-effects in this disease, especially in regard to possible mental changes and persistence of residual paralyses. Farquhar Buzzard,[2] writing at the same time, was more certain that such results might be expected. "I am convinced," he wrote, "that a large number of cases of epilepsy, of mental deficiency, of hemiplegia, and of diplegia are the permanent results of attacks of encephalitis in childhood."

In spite of the widespread prevalence of the disease, this aspect of the problem has received comparatively little attention in the abundant literature which has grown up round the subject. It would have been useful had any record been made of the ultimate fate of those cases of encephalitis which occurred in the epidemics of the disease prevalent in Northern Italy in 1890, and in Germany in 1892. But we have been unable to trace any such record. Leichtenstern,[3] Nauwerck,[4] and others who investigated these cases confined themselves to a study of the symptomatology and pathology of the disease; and Chartier,[5] in a full review of the literature of the subject of acute encephalitis in 1907, provided no evidence of after-effects which may follow the disease.

Permanent Disabilities.

More recent publications have indicated, however, that we may expect to find various degrees of permanent disability in many of the patients who have been affected during the past few years. Batten and Still's[6] original paper on "Epidemic Stupor" in children contains no reference to these sequels of the disease; but since we have had an opportunity of re-examining three of the four cases therein described, we can supplement this record. These are included in our series of cases, and it will suffice for the moment to say that each of them has been permanently affected. One, quite mentally deficient and incapable of recognising even her own parents, is now an inmate of a mental hospital; the second has become a dull, backward, and slow-witted child; the third, since recovery from his illness, has shown a strange alteration in habits and character; he is now an incorrigible kleptomaniac, and has spent most of the period since recovery under detention for theft.

Cruchet[7] has contributed valuable observations on the results of encephalitis lethargica in 32 cases. Of these, 12 were directly fatal. The remainder were all affected in some way, showing either the paralysis agitans syndrome, perverse irregular movements, or some degree of mental deficiency. Francioni[8] has recently published 20 cases illustrating a post-encephalitic syndrome in children. In these

cases, after subsidence of the acute symptoms, there persisted insomnia, restlessness, and definite mental changes which showed themselves in various degrees of moral obliquity. The nocturnal restlessness and diurnal somnolence which may follow encephalitis in children has received considerable attention. Roasenda,[9] Morley Fletcher,[10] and Findlay and Shiskin[11] have described such cases. But in these there was ultimate improvement and recovery; the condition appears to be a manifestation occurring in the stage of recovery from the acute symptoms, and not a permanent sequel. One of the most striking of the after-results of the disease is the condition of symptomatic paralysis agitans. Farquhar Buzzard and Greenfield[12] have described the condition in an adult; and Kinnier Wilson[13] has reported two cases, in which the resemblance to a case of Parkinson's disease was persisting 12 and 15 months after the acute stage of encephalitis. We have included in our series a similar case in a boy of 8 years.

Results in 25 Cases of Encephalitis.

In our investigations we have not concerned ourselves with the questions of the symptomatology or the pathogenesis of the disease. We have chosen 25 cases between the ages of 3 months and 11 years, in which the diagnosis of epidemic encephalitis appeared to be straightforward and incontrovertible. Each case was closely observed as an in-patient, either in the Hospital for Sick Children, Great Ormond-street, or in the children's ward, St. Thomas's Hospital. The diagnosis was reached, in each instance, only after examinations of the cerebro-spinal fluid had been made and the Wassermann reactions of the blood and cerebro-spinal fluid obtained. In each case the ultimate course of the disease was such as to confirm the diagnosis against the possible mistake of having included such conditions as brain tumour or brain abscess. And finally, in order that a proper estimate of the effect of the disease might be attempted, we have included as cases only those children who, before the onset of the illness, were of normal health and intelligence.

Mortality Results.

Of our 25 cases only one was fatal. This was a girl aged 1 year and 9 months. The onset of the illness in this case was sudden, with fever, delirium, and convulsive twitchings; coma ensued, and continued until death on the seventh day of the illness. The diagnosis was confirmed at a post-mortem examination. In comparison with the figures of other observers who have investigated the disease in adults a mortality of 1 in 25 must be considered a low rate. Economo[14] and Netter[15] have estimated the mortality in cases they have seen at 40 per cent. and 30 per cent. It would appear that in children the immediate mortality is less. In Findlay and Shiskin's series of 24 cases in children under 16 years of age two died.

The Effect of the Illness on Surviving Cases.

Of our cases, 24 survived the initial illness and are still alive. In the table of results are given brief descriptions of their present condition, based on recent clinical examination of the patients and on evidence of the mental condition given by parents and friends. In 6 of these children a complete recovery has resulted. They are as bright, intelligent, and active as normal children of their age; no sign of the illness remains. The remaining 18 children all show definite affections directly attributable to the original attack of encephalitis. These affections are so varied that some attempt at their classification is advisable.

Effect on Mental Condition.

The most apparent results are to be seen in the present mental condition of the children. Of the 18 cases affected, 7 are grossly mentally deficient and 11 show minor degrees of mental deficiency.

The seven grossly mentally deficient cases appear to be in a state of permanent and hopeless idiocy. Unintelligible, unable to recognise even their parents, grimacing and drooling from their lips, they present the typical picture of an idiot child, with all its abnormal gestures and actions. The eldest is now 7 years of age and is an inmate of a mental hospital; the remainder are probably destined to a similar existence. Two of these cases (Nos. 8 and 11 in the table of results) are, moreover, in a condition of spastic diplegia with "scissor legs" and contractures.

The second group of 11 cases includes those children in whom slighter degrees of mental deficiency—mere dulling of the intellect, or abnormal psychical symptoms—have resulted. In all of these the mental changes are greater than could be accounted for by the long period of ill-health, with its lack of teaching or other mental stimulus, through which they passed. They date from the illness itself, and must depend upon the organic changes resulting from the acute inflammatory affection of the brain substance. The worst cases, though able to recognise their parents and other familiar objects, are yet too dull to learn a simple lesson. The probability is that with training they will develop sufficient intellect to preserve themselves from danger, but will be incapable of earning their own livings, and will thus be classified as imbeciles in the usual meaning of the term. Others of this group we have classified as being slightly mentally deficient. Their parents usually describe these as dull and backward since their illness. We have also included in this group four important cases (Nos. 16, 17, 22, and 25 in the table of results) with a medico-legal interest. These children were normal before being affected by encephalitis lethargica. Since their illness they have regained their capacity for lessons, but definite affection and alteration of the moral sense has resulted. They are mischievous and untrustworthy, and some phrase such as "altered habits" is used by their parents to describe the change. One of these is so marked a case of moral imbecility, resulting from encephalitis, as to deserve a more particular description.

No. 25, in February, 1918, then aged 11 years, had encephalitis lethargica with confusion, stupor, and lethargy for five weeks. There was slight rigidity of the limbs and tremor of the hands during the stage of recovery. This case was described by Dr. Batten and Dr. Still in their paper on Epidemic Stupor. The boy appeared to make a complete recovery and was discharged from hospital. He was next seen by us in 1921, being then 14 years old. His mother, who has six other children, was emphatic in her description of the change the illness had wrought in the boy's character. Previously he had been a normal, intelligent, and docile child. Since his illness he has shown uncontrollable criminal tendencies. He has been convicted for theft on several occasions, and is regarded by the police as an incorrigible thief. His intelligence does not appear to be impaired. He could remember the name of the physician under whose care he was three years ago.

Another case, No. 22, has been similarly affected. Since recovery from his illness he has shown mischievous uncontrollable tendencies. It has been found necessary to remove him to an industrial school, in an attempt to check the moral changes which are showing themselves.

Effect on Physical Condition.

The children are all well nourished. They have preserved the ability to gain weight and thrive. Those who are grossly mentally deficient show that delay in the acquisition of normal actions usually seen in such children. They reach the age of 18 months to 2 years before they can sit up. The power of standing and walking is delayed in a like manner. In these cases the physical condition is a result of the mental backwardness and not due to organic paralyses. In seven of the cases there are, however, organic residual paralyses which have persisted since the original illness. Two of these (Nos. 8 and 11), now aged 2½ and 5½ years, are typical examples of spastic diplegia. With "scissor leg" gaits, spastic legs, and extensor plantar responses, they present a clinical picture indistinguishable from those cases of spastic diplegia usually ascribed to prenatal cerebral damage and birth injury. In one case (No. 24) the hemiplegia, which arose during the acute stage of the encephalitis,

Table of Results.

No. of case.	Age in years at onset of attack.	Character of illness.	Present condition of patient.
1	3/12	Severe case; S. 6 wk.; oph.; slow recy.	Now 2 6/12 yr.; unable to sit up or talk; idiot; perverse movements.
2	4/12	Severe case; S. and convulsive twitchings 4 wk.; slow recy., appearance spastic rigidity limbs.	Now 1 6/12 yr.; idiot; continually screaming, unable to sit up or recognise parents.
3	11/12	L., difficult to rouse for 1 wk.; ptosis.	Now 4 6/12 yr.; complete recy.
4	11/12	L.S. 6 wk.; oph.	Now 3 yr.; idiot; unable to talk or recognise parents; perverse movements.
5	11/12	L.S. 6 wk.; oph.	Now 2 8/12 yr.; idiot; unable to sit up, talk, or recognise parents.
6	1 1/12	L.S. 6 wk.	Now 2 7/12 yr.; mentally deficient; can recognise parents and say few simple words; cannot sit up, purposeless movements with limbs.
7	1 3/12	Sudden onset; convulsions, then S. 3 wk.	Now 4 11/12 yr.; mentally deficient; unable to walk; can recognise parents; purposeless movements with limbs.
8	1 3/12	Slow onset; L.S. 2 mth.; oph.	Now 2 6/12 yr.; typical picture of spastic diplegia; idiot; scissor legs and oph.
9	1 8/12	Sudden onset; unconscious, fits, hemiplegia; rapid recy.	Now 2 2/12 yr.; complete recy.
10	1 9/12	Sudden onset, fever, delirium, convulsions.	Death on 7th day of illness; diagnosis confirmed at P.M.
11	2 6/12	L.S. 4 wk.; oph.; rigidity of limbs on recy. from stupor.	Now 5 6/12 yr.; idiot; spastic diplegia; scissor gait; cannot speak.
12	2 10/12	Convulsions, L.S.	Now 5 1/12 yr.; mentally deficient; clean in habits; can say few words; knows his name, unable to walk; purposeless movements of limbs.
13	4	L.S. 4 wk.; oph.	Now 7 yr.; idiot; in mental hospital; unable to recognise his parents; rigidity of arms and legs, with purposeless movements.
14	4	L.S. 3 wk.; oph.; rapid improvement.	Now 4 6/12 yr.; complete recy.
15	5	L.S. 3 wk.; ataxia of arms on recy.	Now 6 6/12 yr.; complete recy.
16	5	L.S. 6 wk.; oph.	Now 6 yr.; good recy.; intelligence normal; restless, irritable, and altered in habits.
17	5	Fever, L.S. 4 wk.; oph.; slow recy., followed by ataxia.	Now 8 yr.; slightly affected; dull and backward, attends special school for mentally deficient.
18	6	Gradual onset; L.S. 4 wk.; oph.	Now 9 yr.; mentally backward, untrustworthy, emotional; otherwise normal.
19	6	S. 3 wk.; recy., with marked ataxia of arms and legs.	Now 7 yr.; complete mental recy., but still slight ataxia in gait.
20	6	Sudden onset with delirium; unconscious 2 wk.; hemiplegia and convulsions, rapid recy.	Now 8 yr.; attends school for mentally deficient; dull and backward, no paralysis; sleep-walker.
21	7	Sudden onset; severe choreiform type.	Now 8 yr.; symptomatic paralysis agitans syndrome; fixed attitude, mask-like face, pill-rolling movements of fingers; mentally backward.
22	9	Gradual onset; L.S. 4 wk.; oph.	Now 12 yr.; dull, mentally backward; ataxia of left arm; character altered; now in an industrial school.
23	9	L.S. 1 wk.; oph.; delusions during stage of recy.	Now 12 yr.; complete recy.
24	10	L.S., hemiplegia.	Now 12 yr.; mentally backward, right hemiplegia; contractures persist.
25	11	Confusion and stupor 5 wk.; slow recy.	Now 14 yr.; altered habits; kleptomaniac; good physical recy.

Oph., ophthalmoplegia. Recy., recovery. L., lethargy. S., stupor.

has persisted, and contractures have resulted. Three cases (Nos. 17, 19, and 22) have residual ataxia and incoördination of the arms, without any sign of an organic pyramidal lesion. In one case (No. 21) the symptomatic paralysis agitans syndrome has resulted. The boy is now 8 years old. The original encephalitis occurred 15 months ago, and was of severe "choreiform" type. On recovery from the acute stage of the illness the characteristic tremors and rigidity developed. He now presents the remarkable appearance of a well-marked case of paralysis agitans in a child of 8 years.

Effect of Age.

It will be seen on reference to the table of results how much more serious the results of encephalitis are in the infants and young children than in the older children. Of those affected before the age of 12 months only one has made a complete recovery, while four have become quite mentally deficient, and have remained in that condition up to the time of re-examination in July, 1921.

Severity of the Initial Illness.

The severity of the initial attack of encephalitis appears to be in direct proportion to the after-results which follow it. Some degree of mental deficiency may be expected to result from the illness if the stupor and lethargy persist for three or four weeks in a young child. On the other hand, a short illness, with stupor for a few days only, will probably result in complete recovery. No. 3 is an example. This child, aged 11 months, became ill on April 30th, 1918, and was admitted under the care of the late Dr. Batten, who was responsible for the diagnosis. For six days he was drowsy and could not be wakened. The symptoms began to pass off on the seventh day. The improvement was rapid. The child made a rapid recovery, and is now active and intelligent. This suggests that could some means of treatment be found which would limit the progress of the disease or shorten its course, the results would not be so drastic as we have found them to be.

Conclusions.

1. In the majority of cases epidemic encephalitis in children is followed by permanent after-results, which may affect either the mental or the physical condition.

2. In our series of cases only one-fourth made a complete recovery.

3. The mortality rate of this disease in children is low; 1 in 25 in our series of cases.

4. The results of the mental changes following encephalitis in childhood may vary from complete idiocy to slight mental deficiency. They may also show themselves as affections of the character and habits of the child.

5. The physical changes following encephalitis in childhood include spastic diplegia, hemiplegia, symptomatic paralysis agitans, muscular rigidity, and tremors.

6. The younger the child at the onset of the disease, and the longer the acute stage of the illness, the greater will be the degree of mental deficiency which follows it.

Our thanks are due to Dr. G. F. Still, Dr. F. J. Poynton, Dr. Robert Hutchison, and Dr. H. Thursfield, of the Hospital for Sick Children, Great Ormond-street, and to Dr. R. C. Jewesbury, of St. Thomas's Hospital, in whose wards we investigated the cases we have described.

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EFFECT OF CULTURE-MEDIA UPON AGGLUTINATION OF MENINGOCOCCI.

BY I. WALKER HALL, M.D. VICT.,
PROFESSOR OF PATHOLOGY AND BACTERIOLOGY, UNIVERSITY OF BRISTOL;
AND
G. E. TILSLEY, M.R.C.S., L.R.C.P. LOND.,
FORMERLY DEMONSTRATOR OF PATHOLOGY, UNIVERSITY OF BRISTOL.

(From the Pathological Department of the University of Bristol.)

VARIATIONS in the rapidity of growth and size of colonies, or delayed appearances of typical characteristics due to the use of media differing in constitution or methods of preparation, are well known. That the antigenic and agglutinative features might also be altered was suggested during some of our previous work.[1 2 3] Victorson has shown that *B. paratyphosus B* shows differences in agglutinability when grown upon blood agar, Löffler's serum, dextrose broth, lactose broth, or potato.[8] Michaelis observed that the strain known as *X 19* was influenced in its agglutination titre by the nutrient media selected for its isolation and subculture.[11]

The present communication is concerned with the growth of meningococci upon varying media, especially with regard to the preparation of emulsions for the purpose of typing the several strains. The technique has been modelled as far as possible upon the criteria demanded by Tulloch.[6]

The material for the investigation was obtained from local cases examined during the epidemic of 1916. After isolation and type identification of the meningococcus, an aliquot portion of a counted emulsion of each strain was sown on plates containing equal volumes of warm 20 and 40 amino-acid nut nasgar, nut nasgar with buffer salts or ascitic glucose fluid, and legumen agar with, and without, the addition of blood. All the types of media were titrated to pH 7·6. After 24 hours' growth the colonies were emulsified in freshly prepared normal saline in distilled water, and then heated to 65° C. for 20 minutes. Two c.cm. of 5 per cent. pure phenol were then added for each 20 c.cm., and the whole emulsion standardised to contain 2000 meningococci per c.cm. The emulsions were transferred to sterile corked bottles.

Owing to the pressure of war work, it was not possible at that time to make more than a few preliminary estimations. The numerous emulsions were stored in the dark, at room temperature, until the end of 1919, and in the ice-chest thereafter. In February, 1921, they were tested for sterility; no organisms were found in films other than meningococci, and cultures were sterile. When opportunity permitted, it was considered worth while to continue the original intention, in order to determine whether the agglutinability of the emulsions was altered by the long period of storage, and whether the agglutinogenetic capacities of the bacterial protein had been retained.

The "nut nasgar" differed from ordinary nasgar by the inclusion of pea-nut constituents, according to the suggestion of Mackenzie Wallis.[4] The pea-nuts were ground into a coarse powder, and kept in an air-tight bottle. As the pea-nuts exposed for sale are derived from varying sources, we found it necessary to determine which varieties were best for the purpose, and what constituent of the nut acted as a stimulant to bacterial growth. The inquiry is still in hand. For the work now described, the same sample of nuts was available throughout. The preparation was as follows:—

A.		B.	
Pea-nut powder	10 g.	Lait-proto broth[2]	300 c.cm.
Hydrocele or ascitic fluid	100 c.cm.	Distilled water	300 c.cm.
Distilled water	200 c.cm.	Agar-agar	20 g.
		NaCl	3 g.

Boil B until agar melts, and A for 15 minutes, both in steamer. Cool both to 50° C. Add A to B, and add white of one egg. Autoclave and filter. Adjust amino-acid content to 20 or 40.[3] The lait-proto broth was previously adjusted to pH 8·0, and the final product made up to pH 7·6 with N/10 HCl.

The pea nasgar (or legumen agar) was prepared in accordance with the details given in the Medical Research Committee's report on Cerebro-Spinal Fever, 1916, and adjusted to pH 7·6 and 21 amino-acid content.

CHART A.

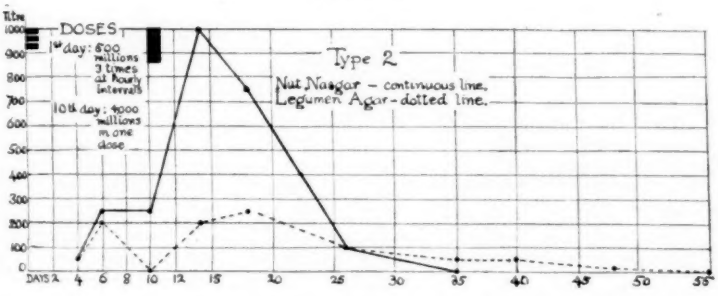
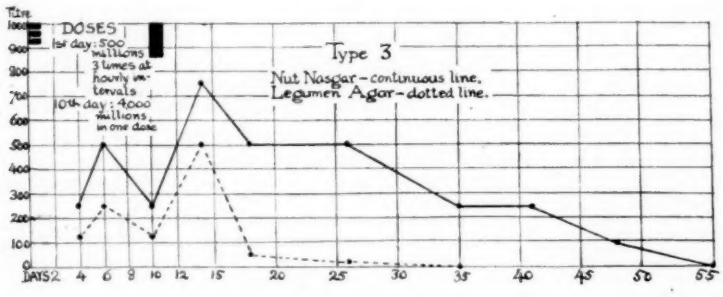


CHART B.



Agglutinability.

Each strain of meningococci was grown upon six media of differing composition. An emulsion was prepared from a 24-hours' growth. Finally, it was subjected to the action of standard type serums, kindly provided by Major J. Bell, R.A.M.C. Lab., Millbank, and set up with the usual controls. The results are stated in Table I. The standard sera were made up to a titre of 1000 for each type, so that the dilutions of each are comparable. The difference between the agglutinability of cocci grown on nut and pea nasgars is quite striking, but neither the amino-acid content nor the addition of buffer salts or glucose effects any change. The reduction of the original broth to 20 per cent. amino-acid content is quite compatible with good growth and agglutinability.

The two types of meningococci show similar differences with regard to the culture media, and the several strains exhibit a uniformity in titre. The

emulsions of type 2 (see Table I.) from nut nasgar are agglutinated to the full standard titre in four out of five strains, the fifth one yielding a 50 per cent.

TABLE I.

Strains.	Type.	Media.					
		Nut nasgar (A.-a., 20 %).	Nut nasgar (A.-a., 40 %).	N.N. + buffer salt (A.-a., 40 %).	N.N. + ascitic glucose (A.-a., 40 %).	Legumen agar (A.-a., 21 %).	Legumen agar + blood (A.-a., 21 %).
3	2	500	500	500	500	300	100
16	2	1000 −	1000 −	500 +	500 +	100	300
8	2	1000 −	500	500	500 +	100 +	100 +
L.	2	1000	1000	1000 −	1000 −	100	500 +
6	3	500 +	500 +	1000 −	1000 −	100	300
9	2	1000	500 +	500	500 +	100	300
	4	100	—	—	100	—	—

A.-a., Amino-acid.

agglutination. The type 3 (see Table I.) coccus agglutinated in full. The emulsions from legumen agar gave one-tenth and one-third of standard titre only.

Agglutinogenic Capacity.

The differences in the agglutinability of meningococci grown upon varying culture media suggested an inquiry into the agglutinogenic capacity of the several emulsions. Two strains L (type 2) and 6 (type 3) were selected for the purpose. The injections were made into young rabbits weighing 1400, 1400, 1650, and 1750 g. according to the method of Hine.[7] On the first day three intravenous injections of 500 millions meningococci at hourly intervals. The emulsions were previously treated with normal rabbit serum with negative findings. Blood was abstracted from each animal on subsequent occasions. On the tenth day each rabbit received intravenously an additional 4000 millions in one dose. The agglutinations developed are recorded in the accompanying charts A and B.

After injection of type 3 the agglutinations developed from the nut and legumen media, both rose until the sixth day, and fell equally. The serum from the rabbit injected with nut emulsions yielded a higher titre. Similarly, a subsequent injection on the tenth day was followed by a rise, in which the "nut" animal maintained the higher titre. The titre from the "legumen" animal had fallen to zero by the twenty-sixth day; that from the "nut" rabbit was demonstrable up to the fifty-sixth day. Following the injections of type 2 the course of titre was in accordance with precedent, but on a low level, while that from the "nut" animal gave a steep curve, rising to 1000 by the fifteenth day. It had disappeared on the thirty-fifth day. That from the "legumen" animal was just demonstrable up to the fifty-sixth day.

Summary.

1. Variations in culture media are associated with changes in the agglutinability of organisms. Individual strains of meningococci when grown on nut nasgar media become more agglutinable than when they are grown on legumen agar, with or without the addition of blood. The observation may be a possible explanation of some of the "inagglutinable" strains of various bacteria.

2. The agglutinogenic substance in meningococci shows also a relation to the content of nutrient media. It is more active in coccal emulsions prepared from nut nasgar media than those obtained from legumen media. This may have a bearing upon the production of anti-serums.

3. Emulsions of meningococci in normal saline made with freshly distilled water heated to 65° C. for 20 minutes, standardised numerically, and then preserved with 0·5 per cent. phenol, have remained unchanged as to numbers, and sterile for five years. At the end of this period, the agglutinability and agglutinogenic capacity persist practically unaltered.

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PROTISTA AND DISEASE:

A Preliminary Note.

BY J. JACKSON CLARKE, M.B. LOND., F.R.C.S. ENG.,

SENIOR SURGEON TO THE HAMPSTEAD AND NORTH-WEST LONDON AND ROYAL NATIONAL ORTHOPÆDIC HOSPITALS.

IN "Protozoa and Disease," Part IV., 1915, the chief thesis is that organisms closely akin to Mycetozoa exist in various human pathological states. Last year an amplification of the same view was contained in a new volume of the same series, and I found that I had misinterpreted some objects represented in one of the illustrations. Publication was delayed for me to correct the error, and its elimination left room for fuller notice of biological groups related to the Mycetozoa. The new matter, showing as it does that vegetable protists and not protozoa are the pathogenic agents in the diseases in question, calls for a new title for the work, which is now near completion with the same title as the heading of this article.

In studying the Chytridians I found that many facts that had arrested my attention in pathology are parallel in this important and interesting group. For instance, Cornu's work[1] on *Olpidiopsis saprolegniæ* showed me that the larger forms of this parasite are almost identical with phases of the parasites known in British pathology as "psorosperms" of cystic ureteritis. There are differences, but the points of accord are such as indicate a close kinship between Cornu's *Olpidiopsis* and Cobbold's psorosperms. Again, in Schröter's paper[2] on *Synchytrium* my attention was arrested by his drawing of interstitial substance between a group of sporangia; this suggested to me an explanation of what I have described as a framework, which appears in molluscum corpuscles in which the protoplasm is in circulation, a phenomenon that occurs about the fourth day in water-cultures.

Synchytrium in a Thistle-Leaf.

Most illuminating of all was the examination of sections of a thistle-leaf infected by a brick-red *Synchytrium*, which I owe to the kindness of Prof. V. H. Blackman and Assistant Prof. R. H. Tabor of the Imperial College of Science and Technology. The sections were made for me by Dr. H. W. Perkins, pathologist to the Hampstead Hospital. The chief features are shown in Fig. 1. The large nucleoli at *d* and *e* have all the characteristics of the intranuclear stage of parasites in the mammary sarcoma, of which a full ocular analysis is given in "Protozoa and Disease," Part II., and the groups of bodies, which in 1895 I demonstrated to the Pathological Society as spores in a secondary syphilitic skin lesion are nearly identical with those seen in this Synchytrian. (Fig. 1 (*i*).)

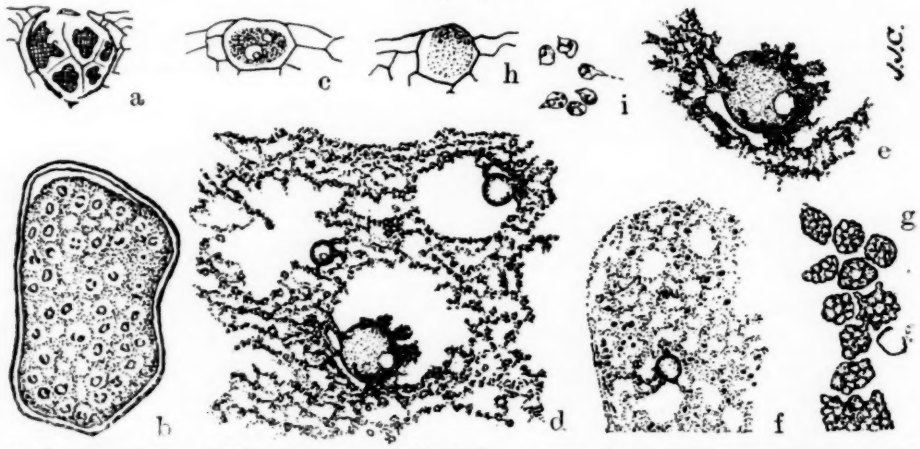
A wide range of nuclear forms and processes is seen in different species of *Synchytrium*. In 1907 Stevens[3] in three species found nuclear structures, some of which are reproduced in Fig. 2. At *b* and *c* are familiar bird's-eye bodies like those of cancer, and the presence of asters among them agrees with the origin of such bodies as I observed it in the living

state in a chronic syphilitic lesion as shown in "Protozoa and Disease," Part II., Fig. 18.

Last year the conclusive settlement of a biological question was made public by K. M. Curtis,[4] who has found that the zoospores of a *Synchytrium* conjugate in pairs, the zygotes so formed alone being capable of developing into resting cells. C. Lundie and F. H. Goss have described observations[5] on

Looking at Fig. 1 (*f*) it is seen that the plasmodium has changed, being finely granular with definite points of chromatin; from plasson it has become a chromidium. It might be supposed that the points of chromatin would become the nuclei of the zoospores, but, instead, the plasmodium would appear to change again, becoming coarsely granular, the granules staining purple; then to subdivide into rounded

FIG. 1.



Details of a species of *Synchytrium* in a thistle-leaf. *a*, sorus subdivided into sporangia; *b*, a sora sporangium, zoospores nearly formed; *c*, early stage of direct sporangium; *d*, part of *c* more magnified showing three nucleoli; *e*, a single nucleolus still more magnified; *f*, a stage later than *d*, a single nucleolus and grains of chromatin in a finely granular plasm; *g*, a stage later than *f*, protoplasm segmented prior to zoospore-formation; *h*, direct sporangium; *i*, part of *h* more magnified, zoospores. Magnification: *a*, *c*, and *h*, × 80; *b*, *d*, *f*, *g*, and *i*, × 1000; *e*, × 1500.

bodies seen by dark-ground illumination in syphilis. Their Figs. 8, 9, and 10 of a bi-flagellate organism are probably of zygotes, which might have become spirochætes in favouring surroundings. The uni-flagellate bodies described by several observers are probably the zoospores, Schaudin's bi-flagellate spirochæte (1905) being the zygote of the parasite which causes syphilis. Curtis does not mention multiplicative fission of zygotes of *S. endobioticum*, but it has been described in the Rhizomastigina, a group of protozoa which have affinities with the Mycetozoa.

In view of spirochæte-like forms having been described in infective sarcoma of dogs by Mettam, in cancer of mice by Gaylord, in vaccine vesicles by Bonhoff, and in mammary sarcoma and in chorio-carcinoma by myself, it will be seen that a wide field for investigation is opened.

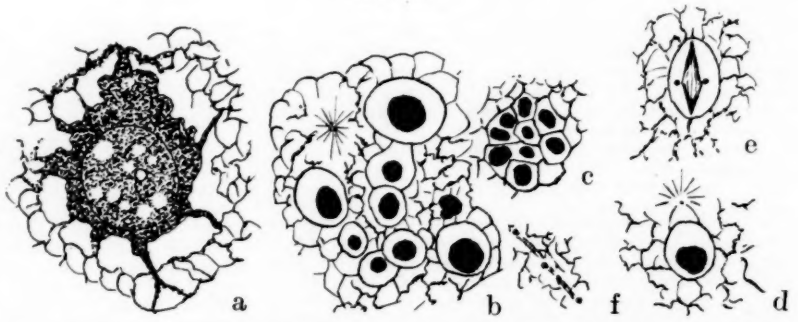
To look again at the nucleolus of the *Synchytrium* in the thistle (Fig. 1 (*e*)), from being composed of uniformly dense refracting material, to which Van Benenden's term plasson*[6] may be applied, it has pushed out buds with granules at their surface, which stain purple with hæmatoxylin. Some of the buds are continuous with the cytoplasmic net composed of linked stellate elements, like those of a mycetozoan plasmodium. The nuclear cavities are sap-vacuoles, and the nucleoli may be called metroplasts, the mother plasson.

segments, in which the nuclei of the zoospores appear and, with much reduction in size, the segments become zoospores. These variations of form in a parasite are easy to recognise in the thistle with its simple cellular structure; in human tissues with a variety of cells it is not always so easy.

"*Plassomyxineæ*."

In 1892 a similar succession of changes was described by myself in bodies in a squamous-celled

FIG. 2.



Nuclear processes in *Synchytrium decipiens*. *a*, large irregular nucleus without membrane, but with a large nucleolus; *b*, group of bird's-eye nuclear bodies with an aster; *c*, cluster of bird's-eye bodies such as are often seen in cancer; *d*, bird's-eye body with aster attached; *e*, mitosis, metaphase; *f*, mitosis anaphase. After F. L. Stevens.

cancer, and later in various cancers and sarcomas, in a secondary syphilitic lesion, in the vaccinated cornea, and in some other pathological conditions. Touching their biological position all that I could say was that they were of the same nature as Cobbold's psorosperms. I have never thought them to be Coccidia. I can now see that the bodies referred to are of the same class of organisms as this Synchytrian of a thistle. There are some points of difference, and the parasites which, with others, I have described in human and some animal diseases constitute a group

* This condensed nucleolus-like form may be distinguished by the qualification *pycno* in contrast to the extended or plasmodial form, which may be called *chasmatoplasson*.

as yet unplaced in biology. They require a name; and having in view their being a branch of the Chytridiales, hence belonging to the vegetable protists with an affinity to the Mycetozoa; and in view of their being in the plasson state at the initial stage of their intracellular life I suggest the name Plassomyxineæ.

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THE VALUE OF THE COMPLEMENT-FIXATION TEST IN PULMONARY TUBERCULOSIS.

A Report to the Medical Research Council from the Institute of Pathology and Research, St. Mary's Hospital.

BY A. LISLE PUNCH, M.B., M.R.C.P. LOND.,
ASSISTANT PHYSICIAN TO THE BROMPTON HOSPITAL.

Introductory Note by

ALEXANDER FLEMING, F.R.C.S. Eng.

MY connexion with the experiments which Dr. Punch has detailed in this article has been that of a scrutineer and critic. I have had no part in the performance of the experiments, and no part of the credit that may accrue from this investigation belongs to me. When Dr. Punch began to perform these tests in the laboratories of the Institute of Pathology and Research at St. Mary's Hospital his first care was to convince me that the test was sufficiently good to be worth proceeding with; for this purpose he obtained bloods from a number of patients whom he knew to be suffering from pulmonary tuberculosis. These bloods, some 30 in all, were not disguised in any way, but in every case I saw the tubes at the time the reading was taken, and was thus able to check the results. At the same time these tuberculous bloods were tested there was mixed with them a certain number of normal bloods derived from workers in the laboratories or from patients attending for other diseases. In every one of these cases the result of the test corresponded with the clinical condition.

Having thus satisfied me that the investigation was worth while, Dr. Punch proceeded to deal with a more extensive series of cases, and in this series he had no opportunity of knowing the origin of the blood until the results of the test had been recorded. The procedure adopted was as follows:—

The specimens were collected, some by Dr. Punch, others by workers in this or other institutions. The serum was taken from these specimens and inactivated, the tubes were then handed to me, with a list giving the names and clinical diagnosis (including the information as to whether tubercle bacilli were present in the sputum). I then re-numbered the tubes, sometimes splitting a specimen into two or three parts bearing different numbers, and if there was any possibility of any tube being recognised by some irregularity in size, or by its being cracked, I changed the serum from this tube into another of ordinary appearance. The key to these numbers I retained till the tests were completed, and then I myself recorded on the key the results which Dr. Punch dictated to me, after which I compared the results with the clinical diagnosis with which I had been provided.

I am not here going to enter into any discussion as to the results; they are set forth at length by Dr. Punch. All I wish to vouch for is that Dr. Punch had no means of knowing which blood he was dealing with until he had completed the test, and I had recorded the results which he gave me.

DR. LISLE PUNCH'S REPORT.

The work contained in this paper has been carried out in the laboratories of the Institute of Pathology and Research at St. Mary's Hospital by the kind permission of Sir Almroth Wright. In September, 1920, I published in THE LANCET a method for the performance of the complement-fixation test in pulmonary tuberculosis, and the results of a series of cases upon which the test had been performed. This article consists of an analysis of a second series of cases, and offers further proof of the accuracy of the test when performed by this method. 185 bloods have been tested in this series in the manner described above by Dr. Fleming. On an average 12 sera were tested at each experiment.

Analysis of Cases.

The serum of 185 individuals was examined.

Group 1.—C.-F.T. Positive Cases.

71 of the cases gave a positive result.

(A) Cases with tubercle bacilli in the sputum at the time of the performance of the test..	42
(B) Cases in which tubercle bacilli were found in the sputum subsequent to the performance of the test	10
(C) Other cases giving a positive result (these cases are considered in more detail)..	19

Group C.—Case, Initials, and Clinical Condition.

1.—E. J. Crepitations at both apices; a few weeks later a very loud pleural rub over left upper lobe; losing weight rapidly; sputum negative for T.B. on two occasions.
2.—A. L. Complains of cough and loss of weight; no sputum; crepitations at right apex; husband has phthisis, one brother died of phthisis.
3.—A. M. Crepitations both upper lobes; cavitation left upper lobe; tuberculous laryngitis; sputum only examined once as yet; negative for T.B.
4 and 5.—A. M. and D. G. Both apparently healthy save for acne; these and the next case, B.O., are discussed below.
6.—B. O. Gunshot wound of chest.
7.—D. M. G. Cough, no sputum, loss of weight; no abnormal physical signs in chest; father died of phthisis.
8.—B. A. Cough, sputum, hæmoptysis ½ pint two years ago; recent clots; no abnormal physical signs in chest.
9.—O. C. No symptoms or signs; dry pleurisy seven months ago; lost a good deal of weight then, subsequently regained it. Treated in sanatorium.
10.—H. A. Considerable hæmoptysis, no other symptoms; no abnormal physical signs in chest.
11.—L. B. Cough, sputum, crepitations left apex, signs of pleural effusion right base; sputum negative for T.B. on one examination.
12.—E. P. Sputum positive for T.B. in 1915; some cough and sputum at present; weight stationary; no crepitations now in chest; sputum not yet examined.
13.—A. J. Complains of cough, sputum, and loss of weight; sputum streaked with blood two months ago; no abnormal physical signs in chest.
14.—W. H. F. Complains of cough, sputum very slight hæmoptysis; crepitations at right apex.
15.—T. A. Complains of cough and sputum; pyrexia present; crepitations over right lung, especially at base; sputum negative for T.B. on two occasions.
16.—H. P. Cough, no sputum; swinging temperature to 103° every evening; extensive abnormal physical signs in chest.
17.—A. F. Complains of cough and sputum, and loss of strength; crepitations at both apices; sputum negative for T.B. on one examination.
18.—V. D. T.B. in the sputum a year ago; cough and sputum at present; no moist sounds at present in chest; sputum negative for T.B.
19.—L. K. T.B. in sputum a year ago; no symptoms or abnormal physical signs in chest at present.

CASE 4.—A. M. A patient in apparent health, save for some acne on the face; test performed on three separate occasions with three different samples of blood; on each occasion a positive result obtained. What exact interpretation should be put on this case is open to argument. In a series of 100 cases of apparently healthy people, or those suffering from diseases other than tuberculosis, this one (or, if Case 6 is included, two) gave a positive result. This patient may recently have suffered from a small undetected tuberculous lesion, or may be at present suffering from such a lesion, which has not yet given rise to symptoms. In any case it is not surprising that in dealing with so widespread and prevalent a condition as tuberculosis, a positive result should be obtained in a small number (in this series only 1 or 2 per cent.) of apparently healthy people.

CASE 5.—D. G. Also a patient suffering from acne; test performed twice on two different samples of blood; positive result on both occasions. On questioning the patient it was elicited that six months previously she had been treated for enlarged glands in the neck, and on palpation numerous small hard glands could be felt on the right side of the neck.

CASE 6.—B. O. A gunshot wound of the chest had been received; some evidence of fibrosis of the lung. In this case it would be a difficult matter to say positively that there was no tuberculous infection. All the cases are under observation.

One case gave a negative result; a second test of the same sample of blood gave a positive result. This case was a patient undoubtedly suffering from phthisis with tubercle bacilli in the sputum. The first time the blood was tested the hæmolysis in the tube containing antigen and 1½ M.H.D. of complement was not quite complete (for the significance of these remarks reference should be made to my paper containing a description of the technique of the test), but hæmolysis in the highest dilution of complement appeared well over 50 per cent.; hence a negative result was recorded. On repeating the test with the same sample of serum the hæmolysis in the tube containing 1½ M.H.D. was again nearly, but not quite, complete, but this time there was nearly complete fixation in the tube containing 1 M.H.D., and a positive result was recorded.

This serum had been split by Dr. Fleming into three parts, and the tubes re-numbered along with some dozen other bloods. All three parts gave a precisely similar reading. It appears reasonable to presume that the first time the test was performed, by some error in technique an excess of complement had been added to the third tube (i.e., the highest dilution of complement). On reviewing this case it would appear that the result should in the first place have been returned as "doubtful."

Cases Giving a Negative C.-F.T.

(1) In which there was no suspicion of tuberculosis. Giving the number of the case, initials, and clinical condition.

1.—H. A. Cardiac hypertrophy.
2.—P. T. Tabes dorsalis.
3.—A. C. Bronchitis.
4.—W. G. ,,
5.—W. O. ,,
6.—I. H. Hypertrophied heart; frontal sinusitis
7.—D. G. Colitis.
8.—T. I. Bronchitis.
9.—R. I. Chronic nephritis.
10.—K. I. Acute rheumatism.
11.—N. E. Aneurysm.
12.—T. V. Auricular fibrillation and coarctation of aorta.
13.—A. P. Gastric ulcer.
14.—A. M. Bronchiectasis.
15.—D. H. Asthma, eczema.
16.—E. J. Mitral stenosis, auricular fibrillation.
17.—W. I. Bronchitis.
18.—A. W. Acne.
19.—D. G. Aortic regurgitation.
20.—S. T. Asthma and infantilism.
21.—C. A. Boils.
22.—S. I. Arrested pulm. tuberculosis.
23.—D. G. Acne.
24.—J. O. Scabies.
25.—S. T. Tabes dorsalis.
26.—C. O. Eczema.
27.—L. I. Bronchitis.
28.—K. I. Psoriasis.
29.—W. V. Paralysis agitans.
30.—H. S. Bronchitis.
31.—Mrs. P. Healthy person.
32.—R. P. Rhonchi and crepitations all over both lungs; Wass. positive; sputum negative for T.B.
33.—L. W. Mitral stenosis.
34.—E. S. Bronchitis.
35.—E. M. Aortic and mitral disease.
36.—H. A. Intestinal stasis.
37.—D. V. Rheumatoid arthritis.
38.—M. A. Rheumatoid arthritis.
39.—J. S. Bronchitis.
40.—D. E. Rheumatoid arthritis.
41.—T. A. Bronchitis and asthma.
42.—F. O. Bronchitis.
43.—C. H. Healthy man.
44.—D. S. ,, ,,
45.—R. W. Bronchitis.
46.—H. W. Bronchiectasis.
47.—F. D. ? Aortic aneurysm.
48.—D. P. Healthy man.
49.—J. O. Auricular fibrillation.
50.—C. O. Bronchitis.
51.—Miss M. Healthy med. student.
52.—Miss F. M. Healthy med. student.
53.—Miss S. Healthy med. student.
54.—B. A. Healthy woman.
55.—W. Healthy man.
56.—E. L. Bronchitis.
57.—M. M. Bronchitis.
58.—D. F. ,,
59.—D. F. Healthy man.
60.—M. F. Bronchitis.
61.—M. A. Healthy med. student.
62.—J. O. Prolapsus uteri.
63.—K. I. Auricular fibrillation.
64.—P. C. Debility.
65.—M. N. Bronchitis and asthma.
66.—M. A. Bronchitis, slight cough; N.A.P.S.*
67.—C. M. D. Empyema, 1917; fibrosis of right lung; hæmoptysis, half teacupful.
68.—S. A. Bronchitis and asthma.
69.—T. I. Rheumatoid arthritis.
70.—E. T. Pharyngitis.
71.—P. D. Mitral regurgitation; Wass. pos.
72.—S. T. Aortic disease.
73.—C. C. Hæmatemesis
74.—L. C. Pneumonia.
75.—H. K. Bronchitis and asthma.
76.—H. A. Acne.
77.—B. U. Paratyphoid fever.
78.—B. A. Bronchitis.
79.—W. E. Aged 14; slight cough; N.A.P.S.
80.—H. O. Rheumatism.
81.—A. U. Tabes dorsalis; Wass. pos.
82.—B. E. Rheumatoid arthritis.
83.—B. A. Rheumatoid arthritis.
84.—K. P. Acne.
85.—W. T. Emphysema.
86.—A. C. Signs of unilateral fibrosis at lung; sputum neg. for T.B.
87.—K. P. Fibrosis left lung following pleurisy five years ago.
88.—B. V. Slight skin eruption.
89.—B. A. ? Actinomycosis of thigh.
90.—G. R. Slight cough; N.A.P.S.
91.—W. L. Syphilis; Wass. pos.
92.—J. P. Cardiac failure.
93.—B. C. Lumbago.
94.—W. M. Cardiac degeneration.
95.—W. S. Adiposity.
96.—B. S. Said to have had considerable hæmoptysis with pneumonia February, 1921; some evidence of bronchitis now.
97.—H. Acne.
98.—C. Acne.
99.—O. G. ,,
100.—E. T. ,,
101.—C. R. Mitral stenosis and regurgitation.
102.—J. G. Hydatid disease of liver.

* N.A.P.S. = No abnormal physical signs in chest.
T.B. = Tubercle bacilli.

(2) Cases in which there was a suspicion but no definite evidence of tuberculosis.

1.—W. H. Loss of weight; slight cough; no sputum; N.A.P.S.
2.—E. B. Anæmia; general malaise; slight cough; N.A.P.S.; sputum negative for T.B.
3.—C. R. Dry pleurisy three months ago; signs of thickened pleura; general condition very good; no symptoms now.
4.—F. Hæmoptysis, states half a teaspoonful; cough; sputum negative for T.B.
5.—A. H. Dry pleurisy January, 1920; no symptoms now; N.A.P.S.
6.—F. L. S. Cough; some loss of weight; sputum negative for T.B.
7.—M. U. ? Pleurisy seven years ago; slight cough, very little sputum; N.A.P.S.
8.—E. B. ? Hæmoptysis; N.A.P.S.
9.—W. O. Sputum streaked with blood; no evidence of tuberculosis clinically.
10.—A. D. Sent for examination; ? phthisis; no evidence clinically.
11.—B. O. ? Hæmoptysis, probably from throat; N.A.P.S.

Case 22, S. I., undoubtedly had phthisis with T.B. in the sputum a year ago. He now appears perfectly well with no symptoms of abnormal physical signs in chest. I sent this case to Dr. Gosse, with no reference to the result of the C.-F.T., asking his opinion. He replied, "I regard this as a case of arrested pulmonary tuberculosis," which was in agreement with the opinion I myself had formed.

One other case remains for special mention. This was a patient, V. F., who came to hospital complaining of cough, in whose chest I could find no abnormal physical signs. The first routine sputum examination was unexpectedly positive for T.B. The C.-F.T. was negative on two separate occasions. It appeared that this was an error in the test, and some slight error of 1 or 2 per cent. is to be expected in any laboratory test. On endeavouring, however, to confirm the presence of T.B. in the sputum, it was discovered that the patient's cough had cleared up after a week in hospital, and no sputum could be obtained. The possibility, therefore, of an error in the sputum examination cannot be overlooked, and such errors are inevitable. It is certainly very significant that in the only case in which T.B. were said to be present in the sputum which gave a negative result it was impossible to confirm their presence.

A Discrepant Series.

Finally, I should like to draw attention to a series of 50 cases dealt with at the Brompton Hospital in November last. These cases were sent to me by a physician at the Brompton Hospital with numbers only attached to the bloods; the results were returned by me to him, and at a later date I was informed of the clinical diagnosis that had been made. The results of these cases appear to be very contradictory. Of 18 bloods sent to me, and stated to be from patients suffering from phthisis with T.B. in the sputum, 13 were returned as positive and 4 as negative, and 1, three samples of which it appears were sent, was returned once as positive and twice as negative. Three cases gave a positive result in which it was stated there was clinical evidence of tuberculosis. Seventeen cases gave a negative result, in which there was stated to be no clinical evidence of tuberculosis. Eleven cases were returned as positive, in which there was no clinical evidence of tuberculosis.

These results are very different from my previous published results totalling 202 cases, which, though not done under a similar system of numbering the tubes, were nevertheless unknown till after the results had been recorded; and from the present series of 186, which have been done under comparable conditions, as described by Dr. Fleming. Moreover, I have performed the test at the Brompton Hospital upon some 450 other cases, in which the results were

comparable to my published results, but which I have not had the opportunity to publish.

I am quite unable at present to explain the indifferent results obtained with these cases, but the series which I have detailed in this article has convinced me of the accuracy of my previous published cases, and has also convinced me that the bad results of these 50 cases were dependent upon some fallacy not inherent in the test.

I should like to thank Dr. A. Fleming, Dr. A. H. Gosse, and the medical officers at the St. Marylebone Infirmary for the assistance they have given me in carrying out this work.

Conclusions.

It would appear that the above results are strictly comparable to those obtained by me previously and published, and that the conclusions drawn from the previous results are confirmed by the present series—namely:—

(1) That in the complement-fixation test we have a reliable means for the diagnosis of an active or recently active tuberculous lesion (pulmonary). It must be emphasised that it is the pulmonary form only of the disease that is dealt with in this paper.

(2) That a negative result is as reliable an indication of the absence of such a lesion as a positive is of its presence.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

TWO PROBABLE CASES OF AMBULATORY ENCEPHALITIS LETHARGICA.

BY C. EUSTACE WILLIAMS, M.R.C.S. ENG., L.D.S.

THE following cases of what appeared to me to be encephalitis lethargica of the ambulatory type came under my notice during the early part of this year, and are chiefly interesting because the exact dates of onset of the initial symptoms were obtainable in both cases.

CASE 1.—The patient was a woman, aged 23, recently married. Up to Jan. 8th she felt quite well; on that day, however, she developed a feeling of nausea which lasted for three or four hours. This continued every day until the 21st, when she was attacked by a fairly severe frontal headache. The next day she consulted me and was given a mixture of tinct. gelsemii ℥v., soda bromide gr.v., and water three times a day. On the 25th the patient began to see double; after three days this suddenly passed off, leaving haziness of vision. On the 29th lethargy made its appearance, the patient feeling an overwhelming desire to sleep after tea; she slept each evening for about four hours, during which time it was possible to wake her up, but she would almost immediately go to sleep again. The medicine was now discontinued, and the symptoms continued until Feb. 9th, when the patient was again brought to me. She slept well at night time, was not refreshed on rising, could not remember things as well as formerly, and felt disinclined for work.

Examination gave the following details: Pupils equal and regular, pupillary reflexes slow; no ptosis, no Romberg; pulse, temperature, and respiration normal; no tremors of hands or tongue; no muscular twitching; cerebration slowed, heart and lungs normal. The patient was given hexamine gr.v., acid soda phosphate gr.x., and water three times a day, and instructed to go to bed. During the following week the temperature never rose above normal. The headache, disordered vision, and lethargy improved; on the eighth day patient was allowed to get up, and next day to go out. On the 25th vision again became blurred, and so she was sent to Dr. Fletcher Stiel, ophthalmic surgeon, who reported: "I certainly agree that she is a mild and suppressed case of lethargic encephalitis. Her actual vision is 6/6 in either eye and her fundi are normal, but her extrinsic muscles are entirely without coördination. I have carefully tested each muscle separately and the result is not that of an ordinary heterophoria at all. There is very definite paresis of third nerve on right side and of the sixth on left side."

Blurred vision continued; three weeks later patient complained of a return of intensified headache and said that her left arm jerked at night. The hexamine mixture was dropped and a strychnine and iron tonic recommended. This was continued, and patient made a gradual and uninterrupted recovery.

CASE 2.—The patient was a woman, aged 23, married, with one child. She was suffering from syphilis, and was having her second course of N.A.B. injections when she suddenly ceased attending the V.D. clinic. Shortly after she came to me with the following history: On the morning of Feb. 1st she woke up with a bad frontal headache and a feeling of heaviness behind the eyes. During that day she felt drowsy but did not actually sleep. Next day she complained of "pins and needles" in both arms and legs, and if she concentrated her vision on any object she seemed to go blind. She now found great difficulty in keeping awake, but could be roused to talk or take some food before going off to sleep again. These symptoms continued until she came to see me on the 14th, on which date she developed a feeling of nausea.

On examination patient presented a dull, heavy appearance, with face pale and practically expressionless; cerebration and speech were much slower than usual and she was in a somewhat lethargic condition. Physical examination revealed pupils equal and regular, pupillary reflexes rather sluggish; no strabismus, no nystagmus, no ptosis; pulse, temperature, and respiration normal, no Romberg, paralysis, or obvious paresis; slight tremors of hands and tongue, no skin eruptions, heart and lungs normal. Patient was given a hexamine mixture and sent to bed. Three days later she was feeling much better, so got up. Symptoms gradually passed off, lethargy being last to go, and by the 21st she was carrying on her ordinary household duties. She was now given a tonic, and for the next month, with the exception of occasional attacks of giddiness, was her normal self. She then resumed her treatment for syphilis.

The following note was supplied to me by Dr. W. P. White, medical officer to the V.D. clinics of Grimsby and Lincoln, with reference to Case 2:—

"The patient attended my clinic on Oct. 13th, 1920; her baby was suffering from congenital syphilis; her husband's blood gave a positive Wassermann reaction, and her own also gave a strongly positive reaction. Treatment was at once commenced, intravenous injections of N.A.B. being given once weekly with gr. i. of hydrarg. ☡ cret. by mouth t.d.s. The first course consisted of two injections of 0·45 g. N.A.B. and six of 0·6 g. Patient then had a month's rest, after which her blood again gave a positive reaction. The second course of treatment was then commenced; after the first three injections she ceased attending; this fact I attributed to ordinary slackness. The patient had told my clinic nurse that she found it very difficult to keep awake if she rested for a few minutes from her house-work. A few days later the patient's husband informed me that his wife was suffering from sleepy sickness. Later on I saw Dr. Williams, who informed me that he was attending her for encephalitis lethargica." This would point to the fact that N.A.B. and its allied arsenical compounds are not a cure for so-called sleepy sickness."

I have seen both patients within a few days of date of writing (June 24th); both are quite recovered, showing no trace of their recent indispositions.

A FOREIGN BODY IN THE KNEE-JOINT FOR 13 YEARS.

BY ALFRED C. SHARP, M.D. GLASG.

THE patient was a young woman, aged 20, who visited Harrogate for spa treatment in September, 1920, on account of pain in the right knee and thigh.

She stated that when she was 7 years of age her right knee was painful and swollen, and a splint was applied for three months. She considered the trouble originated with a knock when 6 years old. She was then all right for seven years, at the end of which period the pain and swelling returned. The knee was thereupon kept in plaster of Paris for six months with no improvement. Later the pain came on at intervals, and although she had several different treatments no improvement occurred.

She was always able to walk in comfort until August, 1920, when after walking the pain in the knee was much worse, being stabbing in character and deep-seated as though from bone; at the same time she experienced an aching pain in front of the right hip and thigh. The stabbing pain, after resting, became

X ray photograph of knee-joint, showing broken pointed end of a needle (indicated by arrow) situated apparently on internal border of ligamentum patellæ and posterior to it.

easier, but left the knee aching. The aching pain often kept the patient awake at night, but she never had "starting pains." The aching was worse in damp weather. After sitting in one position for a time the knee became stiff and any movement was very painful. Otherwise the patient was in good health.

On examination, no swelling of the right knee was detected; no difference in measurement was found on the two sides; no creaking was felt on moving the joint, and both the hip- and knee-joints were freely movable in all directions. On pressure, transversely and laterally, at the lower end of the femur tenderness was elicited.

Drs. C. W. S. Saberton and C. G. Hitchcock X rayed the joint and found the broken pointed end of a needle situated apparently on the internal border of the ligamentum patellæ and posterior to it. The needle was removed by Mr. Gordon Taylor at the Middlesex Hospital in March, 1921. It was found in the extra-synovial fatty tissue round the joint. Since its removal the patient's symptoms have disappeared.

MANCHESTER AND SALFORD RADIUM INSTITUTE.—The institute has just issued its memorandum of association. Amongst other objects are to purchase or otherwise acquire radio-active materials, whether containing radium or meso-thorium, or other radio-active substances of any description; to use the radio-active materials so purchased for the treatment of patients, and to supply, lend, or let the same on hire to hospitals, nursing homes, and other similar institutions and to medical practitioners in such form as the institute may determine. The executive will appoint an expert radiologist and a physicist. The scale of charges will be so adjusted as to secure that the undertaking shall be self-supporting.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT NEWCASTLE-ON-TYNE.

SECTION OF PREVENTIVE MEDICINE WITH INDUSTRIAL DISEASES.

WEDNESDAY, JULY 20TH.

Sir THOMAS OLIVER, the President, after welcoming the audience, which included non-medical visitors, briefly referred to some of the public health problems of Newcastle as typical of an industrial centre which had been greatly affected by war conditions. He then resigned the chair in favour of DR. I. G. MODLIN, Vice-President, who urged medical men to take a more lively interest in the municipal work of the towns where they worked.

Capt. WALTER E. ELLIOT, M.P., then read a paper on

The Effect of Health Legislation on the Health of the People.

He opened by remarking that he was more than ever impressed with the value of prevention as against cure, and it appeared that prevention could only be secured by statutory compulsion. He went on to review public health legislation from the time of the first Sanitary Act in England, dealing with removal of nuisances, passed in 1388, up to the creation of the Ministry of Health, suggesting that the great increase in population after the unlocking of the coal-seams in the nineteenth century compelled the passing of sanitary legislation. Medical skill in treatment had not advanced in the same degree as legislation, and he attributed the remarkable decline in infantile mortality and in the deaths from infectious disease largely to Parliamentary action. The expectation of life among individuals of the community had increased by over ten years during the last half century, and that increase was entirely at the useful period of life, for the man of 70 to-day had still the same expectation as a man of the same age 50 years ago. The supply of water, first dirty and later pure, was one of the greatest examples of the effect of legislation on the health of people, for it first enabled them to wash their clothes and get rid of lice and so of typhus, and latterly had led to the almost complete eradication of typhoid. Turning to factory legislation, he said that it was in a large measure due to agitation by laymen, and especially by Lord Shaftesbury, whose deserts had never received due recognition. Reduction in the hours of work and improvements in working conditions were not to be expected to come spontaneously from large employers of labour; the State alone was capable of tackling such problems. The conditions under which the labouring classes were allowed to live in the North compared unfavourably with those in the South of England, and the children demonstrably suffered.

Dealing with the statistics of tuberculosis, Capt. Elliot said that the rapid post-war drop in the number of deaths had never been satisfactorily explained. Some said that the influenza epidemic, which swept the country like a broom, had cleaned out all the weak chests, but the fact remained that non-pulmonary tuberculosis had declined also and to a greater degree. Surely it was, at least in part, a result of the anti-tuberculosis campaign. Turning to the general problems of health legislation, he said that in spite of the great wave of unemployment the vital statistics of the country did not appear to be deteriorating, and therefore the out-of-work "dole" would undoubtedly come under the heading of public health legislation in its broadest sense. Speaking of the men crippled in the war, he hoped that the schemes evolved to train them would be modified and adapted to deal with the casualties of industry in the future. In conclusion, he said that future efforts towards the improvement of the health of people must be devoted to the enlightenment of the public, to the advancement of medical skill, and finally to certain definite compulsory measures, for

although there was at present a wave of feeling against State interference of any kind, it would be tragic if this blinded the people to the great results of public health legislation in the past.

Discussion.

In the discussion that followed, Dr. T. EUSTACE HILL (C.M.O., Durham) said that whilst it was impossible to legislate in advance of it, he felt that some of our legislators had not felt the pin pricks of public opinion, as evidenced by their failure to get the Milk and Dairies Act put into operation and thus stop the supply of tuberculous milk. He urged the pressing need for reconsidering with a view to codification all the Public Health Acts.—Dr. A. E. COPE (Public Vaccinator, Westminster) said that public health administration was in advance of public opinion; the neglect of vaccination showed the need of education.—Dr. MILLER (C.M.O., Radnor) maintained that there were too many forms to be completed, too much correspondence, and too much "red tape" in connexion with health administration. The least possible interference was desirable.—Dr. D. A. COLES (Gas Light and Coke Co.) drew attention to the neglect of minor injuries in factories, and the lack of means to compel workpeople to use protective appliances.—Dr. DAVID MCKAIL (Glasgow) claimed that municipalities had shown the way to the State rather than the reverse, and contended that the fall in the infantile mortality rate was associated with the decline in the birth-rate.—Dr. W. F. DEARDEN (Port M.O.H., Manchester) thought that legislation had been slow. The medical staff of the Home Office was too small as compared with that of the Ministry of Health.

Capt. ELLIOT, in replying, said that the establishment of the Ministry of Health was too recent for results to be seen. He held that the provision of all funds for health purposes directly from London would be disastrous by discouraging local initiative. He thought that legislation had already done enough to warrant a continuance in the same path.

THURSDAY, JULY 21ST.

Prof. E. L. COLLIS opened a discussion on the *Importance of Industrial Medicine to the Community* in a paper which appears substantially at length in another part of this issue.

Dr. T. M. LEGGE (Home Office) sent a letter in which, while agreeing with the need for and the value to be gained from industrial medicine, he held that the door of the factory must be opened wider to the profession before it can be effectively established. He pointed out that the large sums of money demanded from employers for health insurance, the benefits of which may be a little dubious, may deter them from embarking upon preventive hygiene.

Sir KENNETH GOADBY (Medical Referee for Industrial Poisoning) expressed general agreement with the opinions stated by the opener of the discussion. An expanded version of his remarks appears in our original columns.

Capt. ELLIOT held that coöperation with labour was a necessity for establishing industrial medicine, since the industrial doctor must be a trusted personal friend just as is the family practitioner. He felt dubious as to whether the psychology which expressed itself as labour turnover and laziness was really pathological, rather than being the effect of monotony and specialisation; for the spirit of man revolts against eternal efficiency; man prefers to remain the eternal amateur. Parliament is concerned with big broad issues in labour matters, and he held that the problem of industrial health was a great issue with immediate bearing upon all industrial legislation. One important aspect was that of industrial convalescence; here the work of the Ministry of Pensions carried on for incapacitated soldiers provided the largest medical organisation in the country, with 1,200,000 patients under scientific control. Even so 10 per cent. were unrecoverable—i.e., 120,000 persons needed short-time employment. Thus an experiment on a great scale was in progress of untold value to industry. Industry should profit thereby, and persuade Parliament to maintain and devote to the needs of peace the activities of the Ministry of Pensions; but action must be taken soon or the time will slip past. The influence industrial medicine can exert upon labour unrest cannot be doubted; for the man broken in industry sitting at the rich man's gate provides an appeal, greater perhaps than the individual case justifies, but an appeal which must be heeded.

Dr. DEARDEN pointed out how industrial medicine had become a matter of public interest, and that development was needed. He advocated a medical service on the lines followed by Belgium, where with the reconstruction of industry has advanced pari passu a reconstructed medical organisation with an adequate and independent staff and laboratory facilities for research. We need efficient inspection of adolescents at work carried out by a semi-independent staff. At present the medical staff of the factory department was too small; it required increase and distribution in the industrial centres. In addition, the factory door must be opened to the general practitioner, who cannot give the service he is capable of unless he is acquainted with the industrial risks of his district. Arlidge in the past, and Prosser White to-day, are instances of the value of the general practitioner. He dwelt upon the importance of medical selection for work, instancing the folly of allowing a girl with poor eyesight to become a seamstress, and considered that defective eyesight unnoted was a prolific cause of labour wastage.

Dr. H. KERR (M.O.H., Newcastle) congratulated industry on the development of canteens for supplying operatives with food; but pointed out that, since kitchens were not factories, the industry of cooking was not adequately supervised: it fell between the two stools of factory inspection and the local public health service. He made out a good case for handing over this work to medical officers of health who already have other responsibilities in relation to food.

Dr. MCKAIL felt the need for the factory door to be opened wider to doctors; particularly he considered that examination of young persons for employment without the power of following up was an anomaly. The general practitioner would gain greatly by being brought more into public health work, both in schools and factories. The need for industrial convalescence was great; industry should carry responsibility for those whom it disabled; each worker should be "on the strength" of his industry, and his productivity, even when limited by disability, should be used to its utmost. Education of workers in the risks of occupation was urgently needed to minimise illness and prevent accidents.

Dr. W. DUNCAN (Regional M.O., Stafford) considered that the whole question of industrial medicine was one for the general practitioner. His interest is direct, for the healthier are the panel patients, the less work is there for the panel doctor. He must acquaint himself with the district industries by personal inspection. He must approach employers and get the goodwill of the workers. He must convince both that there is work which he can do which it is to their advantage to have done. The folly of prohibiting light employment needs to be pointed out to friendly societies. Indeed, in this matter the practitioner must act, and act quickly, or he will lose his position.

Dr. MILLER dwelt upon the value of juvenile advisory committees in introducing to work children as they leave school, and asked here for closer coöperation from certifying factory surgeons. He asked, not for the creation of more officials—there were enough already—but for the extension and improvement of the services already in existence.

Sir T. OLIVER was in agreement with extended use of the general practitioner, who to-day does not visit his patients while they are at work, and is not acquainted with their occupational risks. The results are often unfortunate, as he accepts without demur

the statements as to causation of illness made by the patient. These are frequently misleading, as when a post-mortem on a painter certified to have lead colic revealed the presence of a ruptured gastric ulcer.

DR. D. W. INGLIS (Hebburn-on-Tyne) was not convinced that the factory door was so closely barred and slammed as had been represented. This opinion was oftener held by those who had not troubled to push against the door, which nearly always gave way if the handle was turned by a combination of tact and bluff. Most factories provided processes which could advantageously be used as sanatoriums for those convalescing from occupational risks, such as lead poisoning. He urged the need of greater knowledge in the profession of the work of the worker.

Prof. COLLIS, in closing a long and interesting discussion, confined himself to maintaining that unhealthy psychology is the outcome of unhealthy physiology, and that the key to industrial unrest lay in health. The medical profession held this key in the hollow of its hand, and owed to the community the service of turning it in the lock.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

THURSDAY, JULY 21ST.

THE Section of Obstetrics and Gynæcology met at Armstrong College, Newcastle-on-Tyne, on Thursday and Friday, July 21st and 22nd, at 10 A.M., Prof. R. P. RANKEN LYLE (Newcastle-on-Tyne), President of the Section, occupied the chair, and in opening the proceedings drew attention to the importance of the subjects selected for discussion. A discussion on the

RÔLE OF CÆSAREAN SECTION IN MIDWIFERY

was opened by Prof. J. M. MUNRO KERR (Glasgow) and Dr. EARDLEY HOLLAND (London).

Prof. KERR observed that his remarks would be confined entirely to a discussion of the indications for Cæsarean section. The question of technique would be considered by Dr. Holland. Apart from, perhaps, the question of toxæmias, there was no subject in obstetric medicine which was more interesting than Cæsarean section. The modern operation dates back to the "eighties," when stitching of the uterus was introduced by Sänger. The name of Murdoch Cameron should also always be remembered in association with this early pioneer work. At that time contracted pelvis and tumours of the uterus and ovaries obstructing the birth canal were the only indications. In 1898 Lawson Tait suggested placenta prævia as an indication, a suggestion which fell almost as a bomb-shell at the time. In later years, grave eclampsia, accidental hæmorrhage, rigidity of the birth canal, prolapse of the cord, and many other conditions have been cited as indications. This is but natural, since the scope of any surgical operation extends as the technique becomes more perfect. He would like to enter a word of caution in this connexion: discretion must be exercised in selecting cases which are suitable. It should be remembered that after the operation the uterus is permanently injured and liable to rupture in subsequent labours. This very fact limits the scope of the operation. Take, for example, the case of the young primipara with eclampsia. Either she must be sterilised at the original operation, or she must run the risk of a ruptured uterus in a later pregnancy. Sterilisation is a crude procedure and not justifiable. Again, there is the case of the elderly primipara where a difficult forceps operation frequently results in the birth of a dead child and much injury to the mother. Cases such as this, where the indication is not absolute but relative, lead one to the conclusion that all obstetric work should be carried out in hospital or nursing home where every facility is available. Personally, the speaker was convinced that the time will come when all primiparæ and many multiparæ will be confined in institutions, as against the present practice. The argument has been put forward that the younger school of obstetricians are too surgically inclined. This he did not believe was the case. In fact it could hardly be so, as every labour was really a surgical operation.

Indications Discussed in Detail.

The speaker then proceeded to discuss in detail the present-day indications for Cæsarean section as shown by the results obtained from an investigation made by Dr. Holland and himself of the work of all practising British obstetricians during the past ten years. Apart from the question of pelvic contraction, which he had left for consideration by Dr. Holland, the indications for Cæsarean section appeared to fall into the following groups: Tumours obstructing the birth canal, eclampsia, placenta prævia, accidental hæmorrhage, malpositions and anomalies of the fœtus, malposition of uterus (post-operative), rigidity of the cervix and vagina, and maternal diseases.

As regards neoplasms, it is generally agreed that if a fibroid or ovarian cystoma produces obstruction to the passage of the child, the only course open is Cæsarean section. The only criticism against this is that occasionally a fibroid which apparently will cause obstruction is drawn up during the early stages of labour, and no difficulty is experienced. The maternal mortality of Cæsarean section under these circumstances is 8 per cent. and the fœtal mortality 19 per cent. The latter is accounted for by prematurity and malformations due to interference in the growth of the fœtus. In the case of ovarian cystomata, the Cæsarean operation is rarely necessary, as the neoplasm is generally removed during pregnancy, or may be displaced from the pelvis during labour. Eclampsia accounted for 236 cases, with a maternal mortality of 30 per cent. The speaker thought that this high maternal mortality might be lowered by operating earlier. The difficulty, however, lies in selecting appropriate cases, as so many recover by ordinary measures. Cæsarean section may be advisable in a few cases, but our practice should be rather to concentrate upon the prevention of eclampsia than to rely upon operation for its treatment. 70 per cent. of the cases are primiparæ and the fœtal mortality is 44 per cent.

With regard to *placenta prævia* Cæsarean section is essentially suitable for central and lateral cases, and should always be selected for central cases in primiparæ. The maternal results are about the same as for version, but the fœtal mortality is much less (15 per cent.). Personally, he had treated six cases of placenta prævia by Cæsarean section with entirely satisfactory results both to mother and child. *Accidental hæmorrhage* occupies an entirely different position from placenta prævia, inasmuch as the child is always dead. The best results are obtained by the treatment advocated by Gordon Ley—viz., rupture of membranes, extract of pituitary, and measures to combat shock. Cæsarean section is required in relatively few cases. In the case of concealed accidental hæmorrhage the maternal mortality of Cæsarean section is 20 per cent. Concerning *malpositions of the uterus*, such as that following *ventral fixation* or the interposition operation for prolapse, Cæsarean section is only occasionally required. It is unjustifiable in the case of *prolapse of the cord*, the fœtal mortality being 75 per cent. With regard to *abnormal conditions of the child*, Dr. Munro Kerr noted the following indications in his series of collected cases: Large fœtus (11), large head (4), occipito-posterior presentation (2), brow presentation (2), impacted breech (3). The total fœtal mortality of these cases amounted to 9 per cent. *Rigidity of the cervix and vagina* is not often considered to be an indication for the Cæsarean operation, but the speaker wondered whether we are correct in taking this view. The severe damage to the birth canal in the case of the mother and the resulting ill-health, together with the high fœtal mortality from forceps trauma, appear to point in favour of Cæsarean section as being a safer alternative. Here again the difficulty is to predict as to what will happen in any individual case.

The safest procedure is to have the patient in a home or hospital where operative treatment can be adopted at once without risk. Concerning severe *maternal constitutional disease*, the speaker noted 42 cases of cardiac lesions with a maternal mortality of 20 per cent. following Cæsarean section. Two cases of advanced tuberculosis had been treated by the operation with no death. Single cases of diabetic coma and chorea had proved fatal. In conclusion, he observed that it is impossible to lay down rigid and absolute rules in obstetric practice. The wise obstetrician is he who is not prejudiced. One thing was certain, however, and that is that our art is slowly progressing as the years pass by.

Technique and Risks of the Operation.

Dr. HOLLAND, continuing the discussion, said that many obstetric surgeons to-day were not satisfied with the classical operation of Cæsarean section and thought that there was an alternative procedure. What was required was to decrease not only the mortality but also the morbidity of the operation and so extend its scope. Forty years ago Cæsarean section had been standardised much as we do it to-day and the classical operation had deservedly stood the test of time. Its mortality had reached a very low level, and consequently its indications had been extended, and as many thought somewhat recklessly. A very striking contrast as regards mortality was evident in the older and more recent figures. Spiegelburg (second edition, 1882) gives a 50 per cent. mortality, with absolute pelvic contraction as being the only indication. In Amand Routh's important monograph statistics were collected over a period of 20 years, from 1891 to 1910, and the following figures were published relating to maternal mortality:—

	Cases.	Maternal mortality per cent.	
Not in labour	245	....	3·6
In labour—			2·9
Membranes unruptured	224	....	2·2
Membranes ruptured ..		....	10·8
Frequent examinations		....	34

Prof. Kerr and he had thought the time opportune for a further investigation relating to mortality and indication. They had been able to collect records of 5000 cases performed by British obstetric surgeons from 1911 to 1920. Of these, 3500 were cases of contracted pelvis. The results regarding mortality were as follows:—

	Cases.	Deaths.	Per cent.
Not in labour ..	1192	17	1·4
Very early in labour	338	7	1·8
Very long in labour	205	24	10
After forceps ..	102	27	26

The fœtal mortality after forceps was 27 per cent. due to intracranial injuries. Amongst the causes of death in the "clean" cases were general peritonitis (9), pulmonary embolism (3), paralytic ileus (1), intestinal obstruction (1), chronic bronchitis (1). Personally, Dr. Holland thought that the minimal limit of maternal mortality had been reached.

The disadvantages attaching to the classical operation might be classed under four headings: (*a*) risk of sepsis in infected cases, (*b*) risk of rupture of the uterine scar in subsequent pregnancies, (*c*) risk of intestinal complications from adhesion of intestine to uterine scar, (*d*) risk of general peritoneal adhesions. Rupture of the uterine scar has been shown by statistics to occur in 4 per cent. of all cases. This the speaker attributed to the structure of the uterine wall, the position of the incision in the uterine wall, and the liability to infection of the uterine incision. The uterus is a very powerful muscle and its contractions tend to interfere with subsequent healing of any wound made in its substance. The vertical incision as usually made in the upper segment in Cæsarean section tends to gape transversely and accurate approximation of the cut surfaces is difficult. The chief essential in healing is absolute rest, and this is far from being the case in the upper segment operation owing to contraction and retraction. As regards technique the speaker advocated the avoidance of all hurry. Interrupted sutures taking a wide bite of the uterine wall should be introduced, each suture being tied separately. Closure of the uterine peritoneum was most important, as sepsis arises not so much from infected liquor amnii as from a slow leakage through an infected scar. The uterus should be fully retracted before suturing is attempted. The best material to use is silkworm gut. Silk is the next most suitable. Catgut could not be recommended.

Dr. Holland next proceeded to discuss Cæsarean section performed through the lower uterine segment, an operation which had recently been revived by Prof. Kerr. The technique of the operation was described in detail, the speaker favouring a transverse incision through the uterine wall. He had performed the operation upon nine occasions and was very pleased with the results. The technique is certainly more difficult, but the advantages to the patient quite justify its adoption. The advantages which Dr. Holland and Prof. Kerr claim for the operation are as follows: (1) the uterine wound lies in an inactive area and healing is facilitated; (2) the uterine wall is thinner and suturing is more efficient; (3) the incision lies in a less vascular area and therefore there is less hæmorrhage during the operation; (4) adhesions cannot occur, since the wound in the uterine wall is covered by the bladder; (5) for the same reason infection of the peritoneum is less likely to occur; (6) there is less disturbance of the general abdominal cavity; (7) the uterine scar is in a safer area for a subsequent pregnancy and not so liable to rupture.

Discussion.

Dr. WILLIAM ROBINSON (Sunderland) said that the figures brought forward by the openers of the discussion made one thing quite certain, which was that practitioners should, in cases of expected difficulty, call in the services of a consultant before the membranes ruptured. The indications for Cæsarean section mentioned by Prof. Kerr were good, but the difficulty, especially in placenta prævia and eclampsia, lay in the fact that it was not possible to say which patients would recover without operation. Many undoubtedly did so. He quite agreed that all primiparæ should be treated in nursing home or hospital and not in private houses.

Lady BARRETT (London) said that the discussion was very useful in that all points of view could be expressed. She was glad that the relation of fibroids to Cæsarean section had been raised. Personally, she had on several occasions performed myomectomy at the fifth month of pregnancy and labour had subsequently been normal. With regard to eclampsia, the point had been raised that if the operation had been performed early the results would have been better. This was not always the case, as in a patient under her care in whom albuminuria and nausea developed with remarkable rapidity. She had performed Cæsarean section and eclamptic convulsions developed post-partum. The patient died, and yet other patients, apparently worse, got better after Cæsarean section. The whole thing was very puzzling. For placenta prævia, especially in primiparæ, Lady Barrett was quite sure that Cæsarean section was the ideal operation, and was of opinion that it is in this group that the mortality rate will be reduced. In the case of accidental hæmorrhage, on the other hand, she thought that Cæsarean section would largely disappear as a means of treatment. The operation may prove, however, to be very useful in the case of pregnancy complicated by severe cardiac disease. The results of this complication were at present very disappointing. With regard to the new technique, she was much interested in the facts put forward by the openers of the discussion. At the same time she had seen lower segment Cæsarean section performed frequently in Vienna before the war and was not impressed with the results. The majority of the cases died from sepsis. As to the question of less liability to rupture of the scar the operation must stand the test of time.

Dr. WALTER SWAYNE (Bristol) was of opinion that a collective investigation on the lines of that carried out by Prof. KERR and Dr. Holland should be made every two years instead of every ten, as views and practice alter rapidly, and many valuable years are wasted whilst opinion is being moulded. In Bristol, contraction of the pelvis is not common, but other complications of pregnancy and labour, especially eclampsia, are very common. Statistics had brought out very clearly, he thought, the importance of antenatal care. At the same time, he considered the present-day practice to fly to Cæsarean section for any complication of labour essentially wrong.

Dr. R. J. JOHNSTONE (Belfast) thought that the thanks of the Section were owing to Dr. Holland and Prof. Kerr for the very great amount of trouble they had taken in getting together the statistics upon which their opening papers had been based. He proposed that the expenses of the investigation be defrayed out of the British Medical Association funds set aside for research. The proposition was seconded by Dr. W. Robinson and carried unanimously. The President of the Section undertook to bring the matter to the notice of the Council of the Association. Dr. Johnstone also suggested that forms be supplied to every obstetric surgeon to complete at the time of operation. This would make the statistics more reliable and be easier for individuals. With regard to the points that had been raised in the discussion, he was of opinion that Cæsarean section was quite justifiable in most of the cases in which it was performed. Personally he had never regretted doing the operation, but he had certainly regretted not doing it. He was very interested in the technique described by Dr. Holland, but he could not agree that silk-worm gut or silk were the only sutures to employ. His practice was always to use continuous catgut in three layers, including the decidual layer. He also did not agree with Dr. Holland's remark on the musculature of the uterus, and thought that he was entirely wrong in what he had said about the muscle tending "to pull open" the uterus. Twenty-four hours after labour the consistence of the uterus was the same as that of the non-pregnant organ. The uterus, in other words, had tonus, but not undue contraction.

Mr. GORDON LEY (London) supported Dr. Holland's view with regard to the action of the uterine musculature after incision. A wound in the uterus, either made by Cæsarean section or by rupture, always gapes. It most certainly does so at labour and probably this is the tendency afterwards. A ruptured uterus tends, in fact, to herniate through the rupture. With regard to indications for the Cæsarean operation, Mr. Ley quoted a case of post-maturity in which the patient was aged 45 and her husband 72. He had performed Cæsarean section in this case with entirely satisfactory results.

Mr. BECKWITH WHITEHOUSE (Birmingham) referred to the technique of lower segment Cæsarean section. Subsequently to Prof. Kerr's paper at the Royal Society of Medicine in 1920, he had performed the operation twice, but on each occasion had had some difficulty. At the first operation there was much troublesome venous hæmorrhage. On the second occasion Mr. Whitehouse had had considerable difficulty in extracting the child. Apart from these criticisms, the operation appeared to be based upon sound principles and possibly his early difficulties would disappear with further experience of the method. He was much interested in the change of opinion that had taken place during the past ten years with regard to the treatment of placenta prævia. About ten years ago he was present at a discussion at the Royal Society of Medicine when Dr. Jellett expressed the opinion that although he did not consider the Cæsarean operation wrong for placenta prævia, he could not see the necessity for it. This was the opinion expressed by the majority of speakers at that discussion. To-day the position was reversed, and we were all, quite correctly he thought, advocating Cæsarean section as being the ideal operation for many cases. The difficulty lay in deciding upon the suitable cases for operation. Were all cases to be treated by section, and, if not, what was to be the deciding factor? Personally he limited the operation to cases at and after the eighth month of pregnancy where there was a reasonable chance of saving the child. The important thing for the medical profession to recognise was that version was by no means a safe operation for the mother and was, of course, most fatal to the child. At the Maternity Hospital, Birmingham, statistics over a period of ten years proved that version for placenta prævia was associated with a maternal mortality of over 4 per cent., and a fœtal mortality of over 70 per cent. This was deplorable, and he could not help thinking that Cæsarean section would show very different results. He would like it to go forth from the Section that placenta prævia is a complication of pregnancy which always requires nursing home or hospital treatment, and in which Cæsarean section will very probably be required in order to obtain the best results.

Dr. J. W. BRIDE (Manchester) called attention to the statistics of Manchester cases of Cæsarean section contained in Dr. Holland's report. 642 cases of Cæsarean section had been performed in Manchester in the period under review, with a gross maternal mortality of 7·7 per cent. In eclampsia the mortality had been high and in cases performed for contracted pelvis, 25 deaths had occurred, chiefly due to general peritonitis. The conclusions that obstetric surgeons had arrived at in Manchester were that Cæsarean section could be performed with very little risk to the mother except in infected cases, that it was not a suitable operation for eclampsia, but that it was attended with good results in placenta prævia, especially in primiparæ. Rickets was a very common disease in Manchester, 1000 cases occurring in female infants per annum. This probably accounted for the high proportion of cases of contracted pelvis in the Manchester report.

The PRESIDENT expressed the thanks of the Section to the speakers for the valuable discussion, adding that the exchange of views that morning would undoubtedly influence obstetric practice in this country. It was evident, for example, that in eclampsia the indication for operation was very doubtful, as the results were no better if as good as with the older treatment. In placenta prævia, on the other hand, the reverse was the case. One of the most salient facts, he thought, that had issued from the discussion was the importance of conducting obstetric work as far as possible in an institution. Probably in 10 or 15 years all maternity work will be carried out in nursing home or hospital. This, in association with pre-maternity work, will reduce both maternal and fœtal mortality and was the ideal to be aimed at.

Prof. KERR, in reply, wondered if the unfavourable results quoted by Lady Barrett as seen in Vienna were due to the operation of lower segment Cæsarean section being performed for septic cases. This, of course, was the original indication by Thomas. There was an essential difference in advocating the operation for uninfected cases, the indication now being to secure a sounder uterine scar. Mr. Whitehouse had mentioned two difficulties in performing the operation. He quite agreed that difficulty in delivering the child did occur at times, especially if the head was deep in the pelvis. This was one disadvantage of the operation. The other complication of hæmorrhage was not so serious, as it could be controlled, and, furthermore, it occurred also in the classical operation. The point raised by Dr. Johnstone had been answered by Mr. Ley. A wound in the upper segment of the uterus did gape, although perhaps not quite in the graphic manner suggested by Dr. Holland.

TREATMENT OF ADVANCED MALIGNANT DISEASE OF THE CERVIX.

Dr. ARTHUR BURROWS (Manchester) read a paper upon the treatment of advanced malignant disease of the cervix uteri by means of radium. The speaker,

after drawing attention to the importance of distinguishing between radium emanations and the gas evolved from the element, described the technique he employed in treating cases of carcinoma too advanced for any radical operative treatment. A screen of silver, 1 mm. in thickness, was used. Seven tubes containing radium salt are employed and never less than 150 mg. for 24 hours were used. Fifty mg. of radium element were introduced well into the cervical canal under a general anæsthetic. Three other tubes, screened by brass and in the shape of stilets, were introduced into each broad ligament. The cervical tube was removed in 24 hours, but not the smaller tubes. The vagina was packed and douching employed daily after the removal of all tubes to keep the growth clear and to prevent vaginal adhesions. There is still some doubt as to the amount of radium that is actually necessary, but the results have been encouraging with the doses employed. Extremely advanced cases should not be touched. The prognosis appears to improve with the patient's age, the most unfavourable results being obtained in young patients. Involvement of the bladder is not a contra-indication. The best results are found naturally in those cases just past operability. Recurrences sometimes take as long as two years before appearance, and in one case where the opportunity occurred of examining the tissues post mortem six months after radium treatment, no microscopical recurrence could be detected. This was claimed as a cure. Dr. Burrows gave statistics of cases treated by his method dating from 1916 and covering a period of from 3 to 5 years. Two cases are alive and well 5 years after treatment. Six are well after 3 to 4½ years. Five were well 1 year after treatment but were then lost sight of. Six were rendered operable and radical operation was performed. Thirty-two were not cured but were made more comfortable. Twenty-six died quickly without any noticeable improvement. In other words, 6 per cent. of inoperable cases will probably be alive and well 4½ years after treatment, and 12 per cent. will probably live for 3 to 4 years after radium application.

Dr. W. ROBINSON said that if 12 per cent. of inoperable cases of carcinoma of the cervix were cured or relieved by radium treatment, the method should be adopted. He wondered if the cautery was of value in cases of advanced cervical disease. The results given by Burns in Kelly and Noble's "Gynæcology" seemed to challenge comparison with the extended hysterectomy performed to-day. Extension of uterine carcinoma appears to be by permeation, as not more than 30 per cent. of cases show glandular involvement post mortem.

Dr. CAMERON said that he had not had much experience in treating uterine carcinoma by radium, but it was surprising how rapidly superficial growths disappeared under treatment. He advocated very vigorous treatment, and the employment of from 250 to 350 mg. of radium bromide (150 to 200 mg. of element) at least. Such dosage had made inoperable cases operable. He was of opinion that the best results will be obtained by introducing the tubes directly into the tissues.

Mr. W. E. MILES (London) asked Dr. Burrows his grounds for deciding when a malignant cervix was inoperable. He was of opinion that it was impossible to tell unless the abdomen was opened. Because a uterus is somewhat fixed and a large growth present in the vagina the case is not necessarily inoperable. He thought that radium flattered for a time, but that eventually the growth recurred.

Mr. CECIL ROWNTREE (London) thought that Dr. Burrows was greatly to be congratulated upon the results which he had obtained, which almost equalled those of operative treatment. His experience had, however, been much the same as that of Mr. Ernest Miles, and he thought that although the growths shrunk for a time they were eventually attended by the usual fatal result.

Prof. A. DONALD (Manchester) said that he would like to confirm much that Dr. Burrows had said. As regards the cases described, they had been referred to Dr. Burrows by gynæcologists, and certainly they were inoperable.

Prof. KERR (Glasgow) said that he supported Prof. Donald in what he had said about inoperable cases being rendered operable by means of radium.

Mr. WHITEHOUSE asked if any instances of enteritis or colitis had followed Dr. Burrow's vigorous treatment. He believed that this had been the case with some observers, and certainly one fatal case had been recorded in the continental medical press. He congratulated Dr. Burrows upon the excellent results he had achieved in these inoperable cases.

The PRESIDENT said that his experience of radium therapy in uterine cancer was limited to ten or a dozen cases. The first two or three attempts had impressed him greatly and the growths disappeared as if by a charm. Recurrence occurred after six months. It was possible that if hysterectomy had been performed before recurrence was present, the lives of the patients might have been prolonged. He was convinced that we were working along the right lines, but perhaps we were not yet correct in our application.

Dr. BURROWS, in reply, said that large doses of radium should certainly be employed. He did not select cases himself. The question of operability rested with the surgeons who referred the cases to him. He had had no immediate ill-effects beyond one death from phlebitis amongst his earlier cases. This he attributed to sepsis and not to radium. Enteritis and colitis referred to by some writers had not occurred in his practice. Perhaps he had been fortunate.

FRIDAY, JULY 22ND.

NEURASTHENIC ELEMENT IN GYNÆCOLOGY.

Prof. A. DONALD (Manchester) in opening the discussion said that the subject was a difficult one to discuss on a scientific basis. Neurasthenia or nerve exhaustion was, of course, not limited to women. Cases of true neurasthenia and also hysteria were not often referred to the gynæcologist, but the neurotic woman with gynæcological symptoms was, on the other hand, a common type of patient. Only too often was she treated by the insertion of pessaries, specula, applications to the cervix, and so forth, and the speaker was of opinion that many neurotics were manufactured by such treatment. The periods of a woman's life when a nervous upset was most likely to appear were puberty, menstruation, and at the climacteric. Pregnancy, strangely enough, did not appear to be associated frequently with symptoms of nervous origin. Fear of the dangers and risks which pregnancy involves might reasonably be expected to produce in women symptoms akin to those that men exhibited in face of such stress as war. This in point of fact was not the case.

Prof. Donald then proceeded to discuss the value of certain symptoms and signs in relation to actual disease of the pelvic organs as distinguished from a pure neurosis. *Pain* is the commonest symptom of the neurotic, is generally referred to a wide area, and is unassociated with any organic basis. "Backache," if the only symptom present, is generally of nervous origin. Care must be taken, however, to eliminate such gynæcological causes for back-ache as pelvic peritonitis, metritis, chronic cervical catarrh, and rarely displacements of the uterus. So-called "ovarian pain," the speaker thought, was usually of nervous origin. The ovaries as a general rule do not cause pain. Prof. Donald also referred to right-sided abdominal pain often referred to the appendix. This organ at operation frequently appears to be normal in every way. Pain of a periodic character is usually dysmenorrhœal in type. The dysmenorrhœa of the neurotic, however, is never localised, never intense, and persists throughout the period. *Fatigue* is another symptom attributed frequently to neurasthenia. This may be the case, but it must not be overlooked that toxæmias, degenerating fibroids, and chronic metritis are often associated with profound fatigue. *Tenderness* on pressure, especially if general, is often due to neurosis. *Cutaneous hyperæsthesia* is not often marked, except as a cause of dyspareunia. The

speaker had no belief in fissures and abrasions as being a common cause of dyspareunia. It is frequently nervous in origin, but may be due to an irritating leucorrhœal discharge and is curable by curettage. In the same way pruritus vulvæ, attributed to the nervous system, may often be cured by a thorough sterilisation of the vulva and vagina. Operations such as division of the cutaneous nerves appeared to be unnecessary. *Amenorrhœa* had long been known to be associated with a nervous element or nerve shock, especially in cases of fear of pregnancy, or desire for maternity. The same causes often account for examples of so-called "phantom tumour." It must not be forgotten, however, that enteroptosis may on occasion be the cause of this condition. Prof. Donald observed that he was no believer in the "mechanical cause of disease" as a whole, and quoted the case of large ventral hernias of immense size in patients without a single symptom. *The bladder* is very frequently associated with a train of nervous symptoms and diagnosis may at times be difficult. Incontinence in young women is often nervous in origin and without obvious cause. It is amenable to moral treatment. In middle-aged women, on the other hand, it is more usually due to cystocele. Retention of urine after operation is generally of nervous origin. Frequency of micturition may, on the other hand, be due to nervous causes or to a definite lesion of the bladder, such as cystitis of *B. coli* origin, a deep cervical laceration, or, in elderly women, to atrophic changes in the vagina. The diagnosis between symptoms due to a neurosis and those caused by actual disease must depend upon accurate knowledge gained from experience in bimanual examination. If any gynæcological lesion is discovered the question should be asked, "Will the symptoms be cured by removal of such a lesion?" Also, because a woman is in some respects neurotic, this must not be adduced as a reason for not treating any lesion present actually causing symptoms.

Prof. Donald, in conclusion, called attention to certain points of treatment. The use of specula in the consulting room, he thought, was unnecessary if the sense of touch is developed sufficiently. The uterine sound also in his opinion should be reserved entirely for use in the operating theatre. Pessaries he stigmatised as being useless and generally harmful. Most patients wearing pessaries had, he said, been educated to the use of them and could generally be educated out of them. Vaginal douching was harmful when no actual indication for its employment existed. Tampons also, he thought, had no curative effect. Massage and rest undoubtedly did good in some cases, but many neurotic patients rest too much. Exercise would be more beneficial. With regard to the question of operative treatment, the existence of the neurotic element should make the gynæcologist more guarded in his conduct. Objective symptoms are always more important in providing indications for operation than subjective. These remarks particularly applied to operations performed for fixing various organs. How many of these operations, the speaker asked, were performed without the least relief to the patient's symptoms? In a very large proportion of these women complaining of symptoms of neurotic origin, all that was required was a plain talk. It was often not a pleasant duty and perhaps not one liable to make for popularity, but it must on occasion be done. Prof. Donald observed that he had purposely made no reference to psycho-analysis. He had had no experience of it, and he considered it outside the sphere of gynæcology.

The Neurological View.

DR. FARQUHAR BUZZARD (London), continuing the discussion, said that he should define neurasthenia as being a disorder of mind whereby the ordinary activities of life were rendered impossible. The normal mechanism controlling this had broken down. This morbid condition had no physical signs, but was nearly always associated with a group of symptoms of which the most important were depression, insomnia, irritability, restlessness, and a loss of the sense of proportion. With these symptoms, owing to the loss of a controlling influence, there was frequently in addition an exuberant growth of certain mental elements. Anxiety, fears, and various obsessions, for example, assumed proportions which on occasion were put down as being the primary cause of the condition. They were in reality but symptoms or disorders of function. This being so, it followed that mistakes of treatment were sure to follow the adoption of such an erroneous view. The gynæcologist, when confronted with a probable case of neurasthenia, must satisfy himself that no actual physical cause exists to explain the train of symptoms. Correct diagnosis must therefore guide his treatment. Some of the most difficult cases of neurasthenia were those in which the patient appeared not to have a care in the world. The cause was a very difficult problem to elucidate. There must, however, be a cause in every case, but it may be as trifling as the blow which in some sensitive individuals produces a large bruise. Many factors might be concerned, psychic, static, endocrinic, &c. The inherent factor was perhaps the most important, and individual differences should not be overlooked. The mental form of a woman differs as does her outward appearance, and every woman and girl is not equipped with the same power of resisting outside influences, pathological and otherwise. This very fact accounts for some of the nervous disorders occurring amongst school-girls, who with our present social system, are all forced to follow the same régime. At puberty and during adolescence the inherent factor occupied considerable dimensions. New instincts were being developed with the assumption of function of the genital organs, and a breakdown was very likely to occur in the combat between these primitive instincts and social ideals. Visceral sensations may and do assume a painful character when the higher powers are upset. There is no such thing as imaginary pain, and much of the so-called ovarian and other pain in women probably had a basis in the facts noted above. Fatigue, quite apart from pain, is often associated with sexual instincts in women, and restoration to health may be effected by rest alone. *Fear* and *fright*, on the other hand, are often the basis of neurasthenia, and so a vicious circle results. Many women from girlhood onwards live in an atmosphere of fear, often unexpressed. The onset of menstruation, sexual intercourse, pregnancy, lactation, and the dread of carcinoma are all factors in a woman's life, and in many cases provide an element of fear. This is often exaggerated from lack of education. It is inconceivable how great at times this lack of knowledge of the ordinary facts of life may be. The element of fear at times prevents a woman from expressing her symptoms to a gynæcologist, in case he should discover signs of serious disease—e.g., carcinoma. Rest in many patients suffering from early neurasthenia is all that is required. The speaker said that he had no sympathy with the surgeon who gets his patients up too soon after operation, or with the obstetrician who places a time-limit on the duration in bed after a confinement.

Dr. Buzzard thought that the habit of attributing nervous symptoms to certain ages, especially the climacteric, was to be deprecated. Many women pass through the so-called "dangerous age" without any troubles whatsoever. 35 to 45 was the commonest age for neurasthenia is women, and in many cases the actual menopause was not near. Both married and single women had individual causes of neurasthenia peculiar to their state. In point of fact civilisation had imposed certain penalties upon women that did not exist in the case of men, and this was probably responsible for the greater incidence of neurasthenia amongst women. The actual menopause may have an influence, but, as often as not, has none. This is confirmed by the absence of neurasthenic symptoms in a patient passing through an artificial menopause, unless a predisposing cause is also present. In conclusion, the speaker said that with regard to the endocrine glands, although a few years ago he had been biased in their favour, he now had no use for them. He could not recall any case of neurasthenia in which ovarian or mammary extracts had proved to be of any value.

Discussion.

Dr. WILLIAM ROBINSON (Sunderland) agreed with the views put forward by Prof. Donald. Many diseases previously thought to be neurotic in character—e.g., paralysis agitans—had now been proved to be organic, and it was possible that in the case of hysteria some organic change will eventually be discovered. He hoped that in the future more would be heard of the relationship between neurasthenia and the endocrine glands, and instanced the association of some nervous prostration in Addison's disease and excessive fear in hypothyroidism.

Dr. R. H. PARAMORE (Rugby) called attention to the influence of intra-abdominal pressure upon neurasthenia. He did not think that the latter was entirely due to a disorder of mind. Many diseases he was of opinion could only be explained mechanically and were due to diminished pressure. If the heart did not receive sufficient blood the brain would not be nourished. Treatment by rest and abdominal support, he thought, confirmed his views. Dr. Paramore asked if neurasthenia ever occurred during pregnancy. If this was the case it would negative the views he had expressed.

Dr. HELEN BOYLE (Brighton) thought that a great difficulty existed in actually defining neurasthenia. Dr. Buzzard's definition was perhaps too wide to be practicable, and she suggested as an alternative the two words "weak nerves." Dr. Boyle asked the opinion of the meeting on the advisability of stopping lactation in the case of a patient exhibiting nervous symptoms. As a general rule, she thought that stopping lactation rather aggravated neurasthenia. She also drew attention to recurring attacks of neurasthenia at menstrual epochs and as a post-operative sequela. Suicidal tendencies may become manifest at the menstrual periods if depression is profound.

Dr. R. J. JOHNSTONE (Belfast) wondered if neurasthenia was due largely to lack of occupation. It was certainly more common in the better-class type of patient and must be distinguished from the nervous exhaustion of the poorer classes. Neurasthenia is a general lowering of tone of the whole organism, especially of the neuro-muscular system. For this reason he did not quite agree with the definition which limited it entirely to the nervous system. Dr. Johnstone entered a protest against the practice of fixation of the uterus in the "nervous" type of patient. He also deprecated the custom of attributing pelvic pain so frequently to the ovaries. If the ovaries were as easily examined as the testicles he was of opinion that much less would be heard of "ovarian pain." The mental shock consequent upon an operation is a factor which must not be overlooked as a cause of neurasthenia, and patients should, he thought, be treated as invalids for six months after a severe operation. A bad confinement in the patient's sense of the term falls under the same heading, and for this reason the early use of forceps and chloroform as soon as the os is sufficiently dilated is to be recommended. Dr. Johnstone did not agree with Prof. Donald's remarks regarding the use of specula and applications to the cervix. He thought that many patients were improved, if not actually cured, by "consulting-room treatment."

Dr. MARY STURGE (Birmingham) recorded a case of dysmenorrhœa in which nephropexy had been performed, and in her opinion the case had been cured by the operation. Symptoms associated with retroflexion of the uterus were also, from her point of view, often cured by replacement of the uterus by means of a pessary.

Dr. F. BELL (Humshaugh) concurred with Dr. Johnstone in the opinion that much of the neurasthenia in women is the result of fear and pain of labour. The early use of chloroform and forceps, and the employment of scopolamine-morphine narcosis will do much to remove it. The employment of midwives, on the other hand, must tend to increase neurasthenia from this cause.

Prof. RANKEN LYLE (Newcastle-on-Tyne) moved a cordial vote of thanks to Prof. Donald and Dr. Farquhar Buzzard for their valuable opening papers. The object of the discussion had been to differentiate as far as possible between the physical and the nervous in gynæcology and to define a limit between operative and minor treatment. Twenty years ago minor treatment, such as cauterisation of the cervix, the introduction of pessaries, &c., had a great vogue. It was followed by an era of endless minor operations such as Alexander's operation for backward displacement of the uterus. What was required now was to adjust a proper balance between these two schools. Concerning the points raised by various speakers, he was of opinion that pain in the iliac fossæ is of intestinal origin in all cases and may be verified by the administration of a bismuth meal. In 48 hours the meal will have reached the cæcum and pain will be present. Many of the symptoms in the so-called neurotic patient were actually hallucinations or delusions and, as Dr. Buzzard had said, had a basis in fear.

Prof. DONALD, in reply, was in favour of stopping lactation in cases where nervous symptoms were severe. If nervous manifestations follow a surgical operation, he thought that it was usually due to an error of judgment on the part of the surgeon in performing the operation at all. Operations *may* be necessary in patients with the neurotic taint, but should be avoided if possible. With regard to iliac pain, he was of opinion that it was not intestinal in origin but due to some uterine lesion.

Dr. BUZZARD said that he was glad exception had been taken to his definition of neurasthenia. It was a good thing that no definition could be found, as it only tended to narrow one's outlook. What we wanted was to widen it. Dr. Sturge had met with a case of cure following nephropexy and thought it wonderful. Of course it occurred. Everybody knew it and naturally there were many such cases. At the same time it did not alter the fundamental principles which he had tried to explain.

Mr. BECKWITH WHITEHOUSE (Birmingham) read a paper on

CURETTAGE AND THE TREATMENT OF UTERINE HÆMORRHAGE,

in which he expressed the wish to focus attention upon a few of those conditions where hæmorrhage was an important symptom, and where some difficulty arose in assigning a cause even after curettage had been performed; the problems introduced by pregnancy opened up a field too large for the present discussion. The problems of diagnosis and treatment were greatest in cases where gross physical signs were absent, and where the type of hæmorrhage might almost be termed functional. He had made an inquiry into the subject and had published his results in 1914[1]; since that date additional facts had been forthcoming,[2] but hitherto he had had no reason to alter the opinions then expressed. He regarded the menstrual function in the human female as analogous to the pro-œstrum of animals; it consisted of the products of digestion of minute coagula formed in the endometrium and uterine cavity, and mixed with secretion of the uterine glands. Under normal conditions hæmorrhage from the menstruating endometrium was a slow ooze, there being ample time for the blood to be brought into relation with the stroma cells which contain the thrombotic elements and the secretion of the uterine glands which effected thrombolysis.

The Menstrual Theory.

There was little doubt that the ovary was the prime factor in the production of menstrual hæmorrhage. Evidence was accumulating to show that the endometrium must be regarded as a ductless gland producing its own hormone and having a specific action upon the sexual economy. It was intimately

[1] THE LANCET, Hunterian lecture, 1914, i., 877, 951.
[2] Practitioner's Encyclopædia of Gynæcology, 1921, edited by J. S. Fairbairn, Oxford Med. Publ.

associated with the function of the ovarian internal secretion, and Bond believed the two to be antagonistic. Certainly the uterine secretion is profoundly influenced both in its physical and physiological properties by the presence of the ovary. Menstruation was a natural aid to fertilisation and pregnancy, with a means of control so elaborate that its balance was easily upset and anomalies of function were frequently encountered.

Cessation of Menstrual Hæmorrhage.

The machinery of the factors which normally caused cessation of menstrual flow—factors all-important in the production of pathological hæmorrhage—was undoubtedly complex. If the quantitative theory of ovarian secretion were accepted, it would be understood that when the fixed degree of concentration was reduced the stimulus was removed and the menstrual flow ceased. Similarly, if the ovarian hormone were regarded as a complex body requiring for its physiological action the aid of calcium, a stage must be reached when it became inactive owing to the outpouring of calcium salts by the uterine glands. Furthermore, the thrombokinetic function of the endometrium had to be considered; as soon as the uterine glands stopped secreting, the thrombolytic factor ceased and the endometrial vessels were immediately closed by rapid physiological thrombosis. Finally, the uterine muscular contractions taking place during "menstrual labour" exerted some influence in controlling hæmorrhage by limiting and regulating the supply of blood to the endometrium. Periodicity of the function was probably entirely dependent upon general metabolism, in which the whole "sex complex" took part. It was the product of heredity, evolution, and environment, and was comparable to the age of puberty or of the menopause.

Pathological Uterine Hæmorrhage.

If bleeding occurred at what was normally the active period of the menstrual cycle, the loss was customarily termed menorrhagia, and if during the so-called quiescent period, metrorrhagia. This classification was clinically unsatisfactory; for some time the speaker's practice had been to group cases under one of the following headings:—

1. *Menorrhagia.*—Excessive hæmorrhage relating simply to the quantity of blood lost at a menstrual period.

2. *Menostaxis.*—Excessive menstruation as regards duration of the flow; the loss in this case might not be excessive, but simply a long drawn out period.

3. *Epimenorrhœa* (a term introduced by Blair Bell).—Too frequent menstruation—i.e., alteration of rhythm. When a combination of (1) and (3) exists, Blair Bell had suggested the term "epimenorrhagia."

4. *Metrostaxis.*—Uterine hæmorrhage having no relation with menstrual bleeding, including all hæmorrhages before puberty and after the menopause, and all irregular bleeding during a woman's active sexual life.

This classification he had found very useful in practice. All excessive uterine bleeding was due either to general or local causes; speaking very generally, the former predominated in young patients and the latter in married and elderly women. By far the greatest number of cases of hæmorrhage requiring attention occurred either at the commencement or towards the close of active sexual life; a knowledge of the normal microscopical appearances of the endometrium at different stages of the menstrual cycle was essential, as diagnosis of the cause of pathological bleeding must be based upon abnormal appearances of fragments removed by the curette.

Abnormal States of the Endometrium.

There were three abnormal states of the endometrium which demanded consideration—hypertrophy (diffuse or localised), atrophy, and hyperactivity.

Hypertrophy was not uncommon in minor degrees and gave rise to pure menorrhagia; it was commonly a late result of septic infection of a parous uterus, but also occurred quite independently of this factor. In multiparæ it sometimes supervened upon rapidly repeated pregnancies, and in nulliparæ might be associated with chronic pelvic congestion from various sources and hyper-oöphorism. The diagnosis of hypertrophy was readily made by means of curettage; treatment depended upon the cause underlying it. Sometimes curettage alone effected a cure, at other times the intra-uterine application of radium, partial oöphorectomy, or even hysterectomy was required.

Atrophy produced hæmorrhage because of the absence of endometrial stroma with its associated thrombokinase. Normally, as the blood escaped into the tissues, it was brought into contact with a tissue favouring rapid clotting; if this tissue was deficient clotting was delayed or absent, and very profuse and prolonged hæmorrhage occurred which was liable to continue after the ovarian stimulus was withdrawn. Atrophy was often associated with chronic metritis and fibrosis uteri. Subinvolution, on the other hand, and true uterine hypertrophy, such as occurred in single women about the age of the menopause, were commonly combined with hypertrophy and œdema of the endometrium. The diagnosis of atrophy was confirmed by curettage; if with the curette small shreds of tissue only could be removed and the instrument came down immediately upon hard dense uterine wall, it could be concluded that atrophy was the cause of hæmorrhage. Mere curettage would not suffice to control the bleeding; and steps should be taken at the same sitting to control it permanently either by intra-uterine application of radium or by hysterectomy.

Radium in the Control of Uterine Hæmorrhage.

Radium was a very valuable agent for controlling uterine hæmorrhage due to ovarian and endometrial incoördination; he had so far been entirely satisfied with its effects. As far as the endometrium was concerned, radium appeared to produce atrophy both of glands and stroma, but especially of the former. Hence its great value in checking hæmorrhage due to hypertrophy. As regards the ovaries, radium appeared to destroy the Graafian follicles, but did not interfere with the stroma. This was a point of considerable interest, as it had a bearing, of course, upon the origin of the ovarian hormone.

With regard to hyperactivity, if sections were taken from various parts of a normal menstruating endometrium and examined under the microscope, it was found that all present practically the same appearance, both stroma and glands corresponding to the actual stage of the "period." On the other hand, if curettings are examined from some cases of metrostaxis or prolonged menstruation during active sexual life, it was found that all portions of the endometrium were not affected in the same manner at the same time. To this abnormality he thought the term hyperactivity might be applied; the term was only relative, as the endometrium was the reflector of activity of the ovarian and other hormones. In some cases of uterine hæmorrhage lasting from ten to 14 days the loss was often not severe, but the length of the period alarmed the patient; curettings from such a case showed that part of the endometrium was in the pre-menstrual stage and part in the post-menstrual. There had been a tendency to regard this appearance as a definite lesion of the endometrium, and to call it "endometritis," but there was no evidence of inflammation in the ordinary pathological sense of the word. Curettage would always give the clue to the cause of the bleeding if care were taken to examine several portions of the endometrium.

Endometritis as a Cause of Uterine Hæmorrhage.

In the older teaching much that was normal and a certain amount that was abnormal were grouped together under the term "endometritis." True endometritis—a definite inflammation of the endometrium set up by an infecting agent, bacterial or otherwise—was not so common as generally supposed, and was not necessarily associated with uterine hæmorrhage. The one cardinal symptom of true endometritis was the occurrence of a muco-purulent

or purulent discharge. Glandular and atrophic endometritis, as such, did not exist. In 50 cases classed clinically as endometritis by different observers, in which he had examined the curetted material, the following results were obtained: 33 patients gave a history of menorrhagia or menostaxis; 17 gave a history of metrostaxis; 31 showed hypertrophy of endometrium, especially of the glandular elements; 12 showed atrophy of endometrium, with diminution of both glands and stroma; 7 showed marked leucocytic infiltration and plasma cells. In other words, 43 exhibited evidence of these changes which recent investigation had shown to be due to many factors other than inflammation. Endometritis of septic origin did not appear to produce uterine hæmorrhage, with one or two exceptions.

Value of Curettage.

On previous occasions he had more than once entered a protest against the practice of indiscriminate curetting for all cases of obscure uterine hæmorrhage. The operation might do good, but the chances were equally against it if the cause of bleeding was not directly dependent upon pregnancy. As a diagnostic procedure, however, curettage was of paramount importance, especially when the microscopical appearances of the endometrium were considered in relation to the history of the case and the character of the uterine discharge. No report was of value unless submitted by a pathologist conversant with gynæcological pathology, and especially with the endometrium in all its phases. As a therapeutic measure, curettage for uterine hæmorrhage depended upon the cause of bleeding. If the latter was due entirely to the uterus, it might be curative; if it was the result of incoördination of various hormones, curettage would be only palliative, or would fail completely. Treatment, to be effective, must depend upon accurate diagnosis. Much disappointment and failure had resulted from reliance upon empirical methods.

Discussion.

Dr. JOHNSTONE expressed his appreciation of the paper and was much interested in the facts that had been brought forward. Mr. Whitehouse had broken a lot of new ground and the paper was one which required careful consideration at leisure.

Dr. W. R. GROVE (St. Ives, Hunts) thought that Mr. Whitehouse was correct in the views that he had expressed, especially as to the rôle that calcium played in the production of normal and abnormal uterine hæmorrhage. He referred to a paper which Dr. Vines and he had read before the Section of Therapeutics upon the relationship which the calcium metabolism had to varicose ulcers. Calcium salts when administered by mouth were not absorbed and practically the whole was recoverable from the fæces. A calcium deficient may, however, be cured by the administration daily of parathyroid (Burroughs, Wellcome and Co.) in doses of one-tenth of a grain. The calcium index becomes normal in the space of one week under this treatment. Thyroid gland itself did not in his experiments appear to have any influence upon the calcium metabolism. Symptomatic hæmorrhage can frequently be relieved by increasing the coagulability of the blood by the injection of calcium chloride into the gluteal muscles in doses of one grain of the salt dissolved in 4 minims of water.

Mr. GORDON LEY was in entire agreement with what Mr. Whitehouse had said, apart from the influence that the ovary had in maintaining menstrual hæmorrhage. He knew of at least half a dozen cases where uterine bleeding had persisted after removal of both ovaries, and did not think that these cases could be explained on the basis that ovarian tissue had been left at the time of operation. He wondered what was the explanation at the root of such cases.

Prof. LYLE expressed the thanks of the Section to Mr. Whitehouse for his valuable contribution to the work of the Section. Like Dr. Johnstone, he would require time to consider all the facts that Mr. Whitehouse had brought forward upon his subject.

POSITION OF THE MEDICAL PRACTITIONER IN CASES OF PROCURED ABORTION.

Dr. JOHN CAMPBELL (Belfast) read a paper upon the position of the medical practitioner called in to attend a case of procured abortion. He said that a doctor in such cases occupies a dual rôle. He has a duty to perform as a citizen in preventing crime in the interest of the community. He also as a doctor must preserve the secrets of his patient. If a patient did not divulge all the facts to her doctor such reticence might be a grave disadvantage to her. On the other hand, it placed the doctor in a difficult position, as he had to choose between his duty as a citizen and his obligation to his patient. When an illegal operation is contemplated a doctor can do nothing, but he thus becomes unwillingly an accessory to the crime. Dr. Campbell gave details of an instance of this kind occurring in his own practice, which very forcibly had brought the matter under his notice. Frequently the performance of an illegal operation is only discovered when a patient in extremis from either hæmorrhage or sepsis divulges the true facts. Under such circumstances he thought that a doctor must honour the confidence of his patient. Should death occur the doctor's obligation ceases and he is at liberty to expose the knowledge previously placed in his hands. The conclusions at which he had arrived were that a doctor must remain silent when an illegal operation is projected or when it has been done, when such knowledge is brought to him in the course of his professional capacity. After death, on the other hand, this obligation ceases. Dr. Campbell was of opinion that in the present position of British law a grave discrepancy existed, in that the abortionist is held to be solely responsible for the crime and punished accordingly, whereas the individuals who introduce the patient for an illegal operation are generally allowed to escape "scot-free," although being the prime movers in the affair.

Dr. W. ROBINSON said that all induced abortions, whether produced by drugs or instruments, were criminal. He did not consider it a doctor's duty to inform the police when such an abortion was produced by the patient herself. In the case of a single girl where an illegal operation had been done, it was a practitioner's duty to inform the parents or a responsible individual as to what had been done. He could recall several instances, however, where information of an illegal operation had been given, in one case to the Home Office, and no steps had been taken. In the case of information demanded by one of His Majesty's judges in court he was of opinion that facts must be divulged. After all it is only custom that has prevented a medical man from not telling, just as it is custom in the case of a Roman Catholic priest. In a court of law custom falls to the ground and a doctor must tell all he knows when asked by a judge.

Dr. J. D. DAVIES (Llanelly) thought that a doctor would be fully justified in giving information of a projected illegal operation and that he is not justified in becoming an accessory to a crime.

Dr. MORRIS (Cardiff) said that the question raised was a very large one, as probably 80 per cent. of the abortions in all married women are induced and so are criminal.

Prof. LYLE differed from the writer of the paper in the views that he had expressed. The duty of a doctor above all things was to guard his own reputation. For this reason he personally would not treat or have anything to do with such a case, unless the patient gave him permission to inform the police. By this refusal suspicion can never be cast upon a medical man. He should, in other words, take every step not to be involved in cases of this type. Only too often the abortionist does the operation and then transfers the case to a doctor. The medical man really therefore works in collusion with the abortionist. In Newcastle they were in the fortunate position that the practice he had advocated was universal. The result was that the abortionist in Newcastle knew that he could never receive any help from the medical profession, and such cases were never encountered.

Dr. CAMPBELL, in reply, said that he would be very gratified if he could adopt the views expressed by Prof. Lyle. It would certainly save much trouble. He felt, however, that it was unfair to refuse a patient treatment unless she proclaimed her criminality to the world, and he wondered if the profession was justified in taking up such an attitude.

SECTION OF OPHTHALMOLOGY.

WEDNESDAY, JULY 20TH.

On the first day, Prof. J. D. WARDALE, President of the Section, being in the chair, a discussion on the

Causes and Prevention of Blindness

was opened by Mr. N. BISHOP HARMAN (London), based on an analysis of 4288 cases. Mr. Harman's figures came from three sources: (1) a home for blind infants, (2) L.C.C. schools and classes, (3) private case-books. In group 1 the conditions are as follows: out of a total of 63 blind infants, ophthalmia neonatorum is the determining cause in 31; congenital defects account for 19; while the remaining 13 are the result of a variety of diseases. The L.C.C. "myope classes" and schools for the blind (group 2) have furnished in the past 17 years 3300 cases of blind and partly-sighted children. It is not practicable to reproduce in full Mr. Harman's tables, in which he carefully analyses the causes operating to produce blindness or defective vision. Ophthalmia neonatorum is found to account for 299 blind and 68 partly-sighted—a total of 367; interstitial keratitis, due to congenital syphilis, for 362; and interstitial keratitis, in which the evidence of syphilis is not certain, accounts for 24; while disseminated choroiditis of syphilitic origin obtains in 210, together with 19 more in which the evidence of syphilis is not quite complete. This, however, is not the whole tale of syphilis. It appears as a causative agent also in buphthalmia or congenital glaucoma; in defects of the macula; in retinitis pigmentosa; and in irido-cyclitis. Cases of high myopia number 1235. Mr. Harman classifies them according to the mean of the four meridians of the two eyes. The method has obvious disadvantages, as Mr. Harman points out, but a less faulty substitute is difficult to devise. Group 3 consists of persons of all ages met with in private practice, and contains 925 persons. Cataract accounts for 94, and high myopia for 84 cases. Diseases of the uveal tract—iritis, irido-cyclitis, and choroiditis—are responsible for 133 cases; glaucoma for 55; and corneal diseases for 51. In this all-age group the syphilitic cases form the largest section of preventable disease—85, or 9·19 per cent. of the gross total. In infancy congenital defects and purulent conjunctivitis account for nearly all the blindness; amongst school children cases due to congenital syphilis hold first place; but in the all-age group the greater variety of causes operating, many of which mainly or only affect adults, lowers considerably the percentage of cases of blindness for which venereal diseases are responsible. From these returns it is correct to state that 50 per cent. of the blindness of *infancy* is due to ophthalmia neonatorum; that 50 per cent. of the blindness in *school children* is due to parental venereal disease; but the true figures for "*all ages*" are seen to be 2·5 per cent. from gonorrhœa and 9 per cent. from syphilis.

Mr. Harman then discussed prevention. For ophthalmia neonatorum he suggests treatment of the expectant mother combined with, in each convenient area, a mobile unit that could be rushed to every notified case after the manner of a fire brigade.

Dr. J. A. WILSON (Glasgow) considered Mr. Harman's figures not sufficient to gauge the causes of blindness in the general population, and alluded to the results of the inquiry of the Local Government Board in Scotland. He laid stress on the factor of heredity in myopia, and on the importance of seriously grappling with the problem of venereal disease prevention.

Mr. E. H. E. STACK (Bristol) pointed out that there was at present no method available of tackling amblyopia exanopsia. The school age was too late. To get binocular vision treatment should be begun at 3 or 4 years. He recalled that Symes, of Bristol, had drawn attention to the association of phlyctenular keratitis with erythema nodosum. He considered recurrent irido-cyclitis as the most troublesome of all his cases. He agreed with Mr. Harman that goggles should be worn more often by workmen as a protection against accidents, and suggested that light celluloid ones would be more comfortable.

Mr. A. S. PERCIVAL (Newcastle-on-Tyne) gave a simple method of preventing steaming of goggles—viz., rubbing the glass well with dry soap and polishing it afterwards. He also showed the tests that he now uses for determining light-sense, and states that the condition of the macula can be satisfactorily ascertained even in cases of cataract, in which the fundus cannot be directly examined. Thus it is possible to prevent the tragedy of a successful cataract extraction, but no resulting improvement in vision owing to Tay's choroiditis or other unsuspected macular condition. An account of his demonstration is given below.

Dr. H. SCURFIELD (late M.O.H., Sheffield) said that he was interested in ophthalmia neonatorum prevention from the point of view of a medical officer of health. He called attention to Dr. Janet Campbell's statement that ophthalmia neonatorum occurs in nearly 1 per cent. of births in lying-in institutions run by local authorities, and he strongly recommended the appointment of an ophthalmic surgeon to every lying-in hospital. He raised the point—would early skilled treatment always prevent blindness?

Dr. G. FOGGIN (Newcastle) pointed out that the success of the Crédé method depended on the routine disinfection of every eye, and he suggested an association of general practitioners and obstetricians pledged never to attend a birth without disinfecting the baby's eyes. He also deprecated the apathy of education authorities regarding the provision of myope classes.

Mr. W. B. INGLIS POLLOCK (Glasgow) emphasised the amount of preventable blindness due to glaucoma being frequently wrongly diagnosed as cataract.

Mr. J. V. PATERSON (Edinburgh) has seen very few cases of ophthalmia neonatorum in private practice during the past 20 years, although he has had many severe cases in hospital practice. He points out how much more serious blindness in youth is than blindness in old age. He considers many lamellar cataracts to be due to syphilis, and that Tay's choroiditis is often progressive, the macular affection later involving the periphery.

Dr. MARION GILCHRIST (Glasgow) states that trachoma is very common in Glasgow, possibly owing to a large population of Polish Jews, and preventive measures are urgently required. She emphasised the importance of very careful refraction work in myopia, and said that the prevention of blindness was bound up with the prevention of venereal disease.

Mr. HARMAN, in replying, said that, apart from the possibility of subsequent blindness, the closing of the eyes for the first three weeks of life on account of ophthalmia neonatorum often leads to non-development of the macula and nystagmus.

Early Operation in Squint.

Mr. POLLOCK read a paper similar in substance to that which appeared in THE LANCET of June 18th.

Prof. WARDALE considered occlusion of the good eye theoretically excellent but difficult to get done in practice.

Mr. STACK thought that after occlusion for even one month it is possible to tell whether or no there will be improvement in vision. He pointed out also how a man's prospects in life are improved by straightening a squint.

Mr. POLLOCK, in his reply, said that he practised tenotomy only in cases of 40° to 45°, and then incompletely and far back from the cornea.

Light-Sense Test.

Mr. PERCIVAL gave a demonstration of his light-sense test. This consists of two cardboard discs 9 cm. in diameter, one surface of each being blackened.

On the white surface of one disc sectors of black 1 cm. long are marked, that nearest the centre representing in area 0·08 of the inner ring, the next 0·04 of the intermediate ring, and the outer 0·02 of the outer ring. On rotating the disc on a dissecting needle, three grey rings are seen on a white ground. If the patient sees all three rings his L.D. must be at least 0·02. On the blackened surface there are three similar white sectors, so that on rotation three dark-grey rings are seen. If the patient sees all three his L.M. must be at least 0·02. On the other cardboard disc the sectors are smaller, so that, when rotated, the inner ring denotes an L.D. of 1/50, the intermediate 1/100, and the outer 1/200.

THURSDAY, JULY 21ST.

Treatment of Corneal Ulcers.

The discussion was opened by Mr. PATERSON with some preliminary remarks on the structure and nutrition of the cornea and their influence on the peculiarities of corneal ulceration, after which he considered ulcers under two headings: (*a*) those in which the cause comes from without; (*b*) ulcers in which the state of the patient's health is the main factor. Taking the hypopyon ulcer as a type of class (*a*), he insisted upon the importance of early hospital treatment. The state of the tear passages should be carefully investigated and, in elderly patients particularly, the intra-ocular tension. Early cases readily respond to neutral saline bathing, atropine drops twice a day, and a silver salt such as argyrol, 20 per cent., thrice a day. The eye is never covered with any sort of dressing or shade at this stage, but a little sterile vaseline is applied to the lid margins. If the ulcer be progressing at the end of 24 to 48 hours it is touched with pure carbolic, well rubbed into the spreading margin, or even cauterised if it looks unduly threatening. Mr. Paterson generally uses the hand cautery and makes every application under a stereoscopic magnifier. If the ulcer be spreading actively, and associated with hypopyon when seen for the first time, it is immediately cauterised and the hypopyon afterwards evacuated by paracentesis from below. Mr. Paterson considers the Saemisch section very effective when the cautery has failed to check the spread of the ulcer, particularly in cases of small ulcers with a very purulent infiltration extending deeply into the corneal substance. He further often combines cauterisation with heat obtained by holding the cautery very close to less infiltrated parts of the ulcer. A small proportion of ulcers, generally found in old and somewhat feeble patients, apparently resist all treatment. On the whole, Mr. Paterson prefers the Saemisch section, though it, too, may fail. In Edinburgh it is the custom to leave eyes uncovered until the ulcer clears and re-infection is no longer to be feared. Then a pressure bandage may be useful, especially in cases of perforation with leakage from the anterior chamber. The chief complication in cases where there has been widespread corneal destruction is increased tension and staphyloma. Iridectomy is only of moderate value in reducing the tension in these cases, but trephining has given better results. In hypopyon ulcer in children Mr. Paterson has never used the cautery or carbolic. Atropine and the good hygiene and diet of a hospital ward are usually sufficient.

With regard to class (*b*), Mr. Paterson thinks strumous ulcer of the cornea much less common now than 20 years ago, and only a small fraction are of a really severe type. If the symptoms be acute the children are kept in bed, given a simple purgative, and put on small doses of grey powder or calomel. The chief error of diet seems to be an excess of starchy foods. Atropine is used locally and later in combination with dilute yellow oxide of mercury ointment. He seldom has recourse to tuberculin or other vaccine treatment, but has found it valuable in obstinate cases. Very often surgical treatment of tonsils or tuberculous glands is necessary. Herpetic ulcer of the cornea is treated by the application of absolute alcohol, followed by atropine and a bandage. This treatment is satisfactory also in the case of dendriform ulcer, but should always be made in a fairly drastic fashion. Mooren's ulcer often resists treatment of any sort, and the same is also true of the superficial recurring ulcer associated with rosacea of the face.

Dr. H. M. TRAQUAIR (Edinburgh), who has had considerable experience in the treatment of corneal conditions by ionisation, described the methods he has used. With a galvanometer current of ½ to 1 milliamperes and solid zinc electrodes he has had good results in the milder forms of severe ulceration, but in the very severe cases his results were not better than by other means. He emphasised the importance of fresh air and sunlight in the treatment of the strumous ulcers of children.

Mr. PERCIVAL spoke of the value of quinine drops in hypopyon ulcer. He uses a solution of the bihydrochloride of quinine (gr. viii.–℥i.), usually combined with atropine. The quinine treatment should be continued for at least one week after the cessation of the hypopyon. He pointed out that quinine solution goes through Descemet's membrane and quinine fluorescence can be demonstrated in the anterior chamber. He considers that there is danger of infecting a sterile hypopyon by doing a paracentesis where there has been no perforation.

Dr. D. M. MACKAY (Hull) thought carbolic had no bad permanent effect on healthy cornea, and that it was preferable to the cautery. He uses magnesium sulphate in saturated solution as a fomentation, and is satisfied with the results.

Mr. HARMAN was struck with the recommendation for open treatment, and quoted some Dutch experiments which went to show that the reparative powers of the avascular cornea are at their maximum under the influence of warmth. He thinks silver weakens tissue resistance, and uses hydrogen peroxide. He regards the actual cautery as too destructive, and uses instead phenol-camphor (phenol and camphor equal parts). He uses the cautery, however, to destroy the leash of vessels at the limbus in phlyctenular ulceration—a modified peritomy. He pointed out that Guthrie of Liverpool originated section of the ulcer now associated with the name of Saemisch.

Dr. N. B. B. FLEMING (London) recommended in sloughy ulcers five minutes' immersion in an eye-bath of magnesium sulphate lotion, and the subconjunctival injection of colloidal iodine in wound infections where the ulcer is situated near the limbus.

Mr. T. L. DE COURCY (Liverpool) spoke of the value of stock vaccines of conjunctival organisms in marasmic children. The cautery used close to the cornea, but not in contact with it, gave good results. Dionine, up to 5 per cent., combined with atropine, was useful; the results depend on the amount of reaction.

Mr. J. HERN (Darlington) referred to the treatment of a chronic form of ulcer with a clear base, common in middle age and tending to recur each spring after the depression of winter. He stitches up the lids and keeps the patient in bed. He has a high opinion of the value of the Saemisch section and uses 25 per cent. argyrol in septic cases.

Prof. WARDALE thought that the only virtue argyrol had was that it stimulates the patient or the patient's mother to wash out the eye thoroughly in order to remove all traces of it. Thorough irrigation of the eye is important. He uses a flat-pointed cautery to scorch the ulcer without touching it. To counteract photophobia in children he bandages the good eye, and in phlyctenular keratitis uses dionine in pure powder.

Mr. STACK stated that one group of ulcers gets well in 24 hours after the commencement of atropine treatment; another group, generally with a constitutional basis, is not affected.

Mr. POLLOCK also scorches the ulcer, and thinks paracentesis preferable to the Saemisch section. He lays stress on the importance of keeping down tension; he clears out the teeth of adults if necessary, and stops sweets in children.

Mr. H. P. BENNETT (Newcastle-on-Tyne) never ties up the eye, and uses hot bathing for 20 minutes every two hours and even at night, if necessary. If the

tension be up he does paracentesis and treats ulcers associated with acne rosacea with magnesium sulphate lotion.

Mr. PATERSON replied, pointing out that the value of paracentesis lay in its replacing stale aqueous by fresh fluid rich in antibodies. The reduction of increased tension is important, as the hard cornea sloughs more readily. He considers that antiseptics on mucous membranes are of very little use: their sole value is the reaction they produce. Ulcers with yellow, deeply infiltrated margins need powerful chemical or physical agents. He gives internal drugs very little, and is sceptical of their value, but attention to diet is very important.

Short Papers.

Dr. J. A. WILSON (Glasgow) read a paper on Auto-intoxication in Ophthalmology. Sir Arbuthnot Lane has stated that in cases of intestinal toxæmia the eyes are always affected. In all bacteriæmias the synovial membranes, serous membranes, conjunctivæ, ciliary bodies, and iris become not so much secretory as excretory structures, and long ago Mr. Sydney Stephenson had suggested that toxins were excreted by the ciliary bodies. Dr. Wilson gave several instances of eye disease due to toxæmias arising from suppuration in joints, wounds, &c., and considers most non-suppurative, post-operative failures after cataract extraction to be endogenous in origin. Loss of accommodation due to toxæmia is not uncommon. He draws attention to the importance of studying eye conditions from the point of view of general medicine and approves of Dr. Rayner Batten's suggestion that ophthalmic physicians, as well as ophthalmic surgeons, should be appointed to the staff of every eye hospital.

Mr. E. C. MOORE (Gateshead) described a case of Chronic Irido-cyclitis due to Gonorrhœa.

Mr. PERCIVAL described a case of Irido-cyclitis Associated with Stricture of the Urethra, which improved within three days after the operation of internal urethrotomy. He suggested the application of radiant heat as a diagnostic test before operating on suspicious cases. Reaction, as indicated by persistent redness, probably denotes occluded sepsis. The application should be repeated until no reaction appears, and then the case is safe to operate upon.

Dr. TRAQUAIR considers the difficult cases to be not those associated with venereal disease, but those arising from obscure infections. Morax regards all post-operative infections as exogenous, and keratitis punctata always indicates the presence of micro-organisms within the eye. The fact that one eye only is affected as a rule lends further support to the theory of exogenous origin.

Dr. A. MACRAE (Corbridge-on-Tyne) read a paper on Nodular Keratitis of Southern Arabia. This condition is found chiefly in males of middle age or older. A group of nodules is present in the centre of the cornea or its lower half. The nodules are transparent, glassy, covered with normal epithelium, and set close together. There is no opacity, no vascularisation of the cornea or limbus, and the other ocular tissues are healthy or, if diseased, have no causal relationship to the corneal condition. The nodules vary in size; the largest is about 1 mm. in diameter, and projects about the same amount. In a few cases the cornea may be opaque or stain faintly in between the nodules. The group covers a roughly circular or oval area, but a ring form bounding a clear or opaque centre is also found. Dr. MacRae has found this condition in Somalis, Arabs, and Sudanese, whose work is on or by the sea. He has not found it among the inhabitants of the interior. He suggests that the salt-laden winds of the low-lying coast-land is a factor in its causation. The sand is impregnated with minute particles of salt, and is always being blown about in the coastal area. He thinks this condition is found in about one or two of every 200 cases of eye disease seen. Vision is affected considerably, and is better at night.

Reviews and Notices of Books.

THE PSYCHOLOGY OF DAY-DREAMS.

By Dr. J. VARENDONCK, formerly Lecturer in the Paidological Faculty of Brussels. London: George Allen and Unwin. 1921. Pp. 367. 18*s*.

WHILST serving as interpreter at the front Dr. Varendonck became acquainted with Freud's writings, and, being already a practical psychologist, turned his attention to the study of his own day-dreams. The day-dream is not, in his usage of the word, the conscious musing which we call "building castles in the air," but is rather the work of that "fore-conscious" which lies just beneath consciousness, and may influence at any moment our thoughts and actions without our being aware of the processes concerned. All transitions are found, "from the fancy of the boy, who, riding his hobby-horse, plays the part of a general, or the poet who abreacts his unhappy passions in a work of art, or changes it into requited love, to the obscure hysterical sufferer or the schizophrenic." The author has trained his power of seizing upon the last link in the day-dream, whether it occurs during distraction or between sleeping and waking, and of following back the links in the chain so as to reconstruct the whole phantasy. This, being a subjective process, can only be fully understood by experience. Dr. Varendonck, after training himself to recall and record his day-dreams, has studied them by the methods that introspective psychologists have applied to conscious mental processes.

Professor Freud, to whose "Psychopathology of every-day Life" and "Interpretation of Dreams" Dr. Varendonck makes frequent reference, writes a short introduction indicating the importance of the work and its results, though he criticises the use of the phrase "fore-conscious thinking," and would prefer to speak of "freely wandering or phantastic thinking" in contrast to the intentionally directed reflection of our conscious life.

In the first half of the book the process of fore-conscious thinking is analysed: it may proceed by recollections, in which one memory recalls another, and each memory is associated with its own affect (i.e., its own emotional tone); in this type the dream is almost entirely visual, and the dreamer is rather a passive spectator than the actor. In a second type the dream is activated by a wish, and then the pictures are used as illustrations of a theme; the affect is associated more with an idea than with a memory, so that, for example, the recollection of being in a shelled village arouses no horror, though a feeling of interest is continually maintained; the "inner self" is too busy with acting to heed the spectacle. The pictures are not pure recollections, but new creations, which, on analysis, are found to be attempts to solve a problem, each new part being a new proposition, a new question, or a new answer. This type provides examples of creative thought directed by affect. Fore-conscious or affective thinking is able to draw upon memories in a way impossible to consciousness; its inventive faculties are active, and, whereas conscious thought involves the use of energy to exclude ideas judged irrelevant or distasteful, the fore-conscious is under no such restraint, and knows no ethical standard. The author frankly illustrates this by a day-dream in which he loses both legs through a shell explosion; this he does not recognise, until a fortnight later, as being activated by a wish to return to civil life and seek a professorial chair. His psychological blindness to this interpretation, which is a fairly obvious one to the psycho-analyst, is identical with the blindness of the hysteric to his own unconscious motives even when they are obvious to the onlooker. One asks—in all seriousness and with a knowledge that the answer would be valuable—why Dr. Varendonck did not develop a hysterical paraplegia.

Affective thinking is incoherent and uncritical and often loses its end; its defects can be noted in some orators, and, the author might have added, in those psychasthenics—typified by Mrs. Nickleby—who lose conscious control of the verbal stream. In directed thinking we may commit mistakes, but they are criticised and corrected with a conscious aim in view. Distraction results when the fore-conscious wish is censored; but if the fore-conscious wish and the conscious aim are in agreement then affective and directed thinking are united for the fulfilment of the wish. We become aware of the end-result, but not of the preceding chain, and this end-result we call intuition or inspiration. Memory can be considered apart from awareness, and this allows the author to attribute memory to creatures near the bottom of the animal scale; there the affect rules, but in man the intellectual aspect has been so developed that we are able to act and think voluntarily by control of the affect. The primitive process, however, still goes on within us, and is manifested through absent-mindedness and distraction, in errors and mistakes of our daily life, as well as in hysteria and neuroses; inspiration borrows its mechanisms and it explains our behaviour whenever emotions prove stronger than our will.

It is difficult to estimate the amount of originality in this work; some of the material is a presentation of old facts under a new aspect, and some consists of re-statements of old observations. Dr. Varendonck, in assuming that "perception" has hitherto been used only in terms of consciousness, seems unaware that psycho-analysts have for long regarded the fore-conscious as having the power to perceive and retain on its own account. In a modest introduction the author says that he addresses himself to English readers because they, of all nations, show the greatest interest in psycho-analysis. He forgoes any literary claims, but he may be congratulated on his mastery of idjom and meaning; his sentences, however, are often awkward and involved, and a free excision of redundant phrases would help the reader. Other criticisms might be made, but the book is a record of spade-work carried out with honesty and insight, and should rank as an important contribution to psycho-analytical literature.

HUMAN PHYSIOLOGY.

By Prof. LUIGI LUCIANI, Director of the Physiological Institute of the Royal University of Rome. With a Preface by Prof. J. N. LANGLEY, F.R.S. Edited by M. S. PEMBREY, M.A., M.D., Professor of Physiology, University of London. Vol. V. London: Macmillan and Co., Ltd. Pp. 422. 30*s*.

THIS is the last and concluding volume of Luciani's *magnum opus* "Fisilogia dell' Uomo," the first volume of which in English garb appeared in 1911. The first volume of the second Italian edition was published in 1904. This volume deals with metabolism, temperature, reproduction, and so forth. Prof. Luciani also enters the no-man's land between physiology, psychology, and philosophy in the stages of life and death, dealing with maturity, virility, senility, the critical age, personality in the aged, and the author's theory of death. He distinguishes between the *primum moriens* and the *ultimum moriens*—the latter phrase aptly used by Oliver Wendell Holmes in referring to the decayed and decaying tall hat, when tall hats were the fashion, as the "*ultimum moriens* of human respectability." The last chapter of nearly 70 pages on "the human races" is really an appendix, written by Luciani's assistant, Prof. S. Baglioni, and deals with ethnology and anthropology in relation to physiology. In the chapter on "Exchange of Material," besides giving much more than the usual information, Prof. Luciani adds an account of "authenticated fasts."[1] Of vitamins in the Italian text there is no mention, but the British editor adds a note referring the reader to the special report (No. 38) on this subject issued by the Medical Research Council in 1919.

Prof. Luciani discusses in some detail the thermic economy of the organism and human nutrition. The generative system of the female, pregnancy, parturition, and puerperium, are dealt with at length on familiar lines, but in the section dealing with male organs no account is given of any work done since 1910, when F. H. A. Marshall's "The Physiology of Reproduction" was published. The observation on the condition of the epiphyseal cartilages in a castrated man as shown by the X rays ascribed to Lannois and Roy should read Launois and Roy, and the term "nucleus of Blecard" is unfamiliar to us. In dealing with old age, while mentioning Aristotle, Cicero, Camerario, Bacon, Charcot and several others, the work of Humphry of Cambridge seems to have escaped the author's wide outlook.

Throughout the work is written in the fascinating style of which Luciani was a master, and is illuminated by copious references to general literature. We are indebted to the editor, translator, and publisher for the opportunity of studying human physiology as expounded by one of its most eloquent and successful advocates, even though we had to wait a decade between the issue of the first and last volume.

[1] THE LANCET, 1888, i., 543.

REGIONAL ANATOMY.

By T. B. JOHNSTON, M.B., Ch.B. Students' Synopsis Series. London: J. and A. Churchill. 1921. Pp. 438. 12*s*. 6*d*.

Prof. Johnston has provided, in this little book, an excellent member of this well-known series of students' manuals. It is intended for use with the dissected parts, the object being to refresh the reader's memory rather than to fill him up with a mass of "examination" detail. Thus the volume cannot justly be described as a "cram-book." The descriptions are clear and good, if short in some cases. Prof. Johnston points out that he is writing for the average student, who will become the average practitioner, and therefore leaves out unnecessary details. We might disagree with him as to which details were unnecessary, but few would dispute the wisdom of including in this class the fissures of the cerebellum; we are therefore glad to see that, in the short and clear account of the central nervous system, no more space than is absolutely necessary is taken up by this at present sterile subject.

DISEASES OF THE LUNGS.

Lehrbuch der Lungenkrankheiten. Second edition. By ADOLF BACMEISTER, Professor of Medicine at the University of Freiburg i.B., Superintendent of St. Blasien Sanatorium in the Black Forest. Leipzig: George Thieme. 1921. With 103 illustrations and 3 coloured plates. Pp. 339.

Prof. Bacmeister's book on diseases of the lungs begins with an account of the anatomy and physiology of the chest, and the various methods for its examination. A single chapter is devoted to tracheitis, bronchitis, and broncho-pneumonia, and another to chronic bronchitis, bronchiectasis, and emphysema. Pulmonary tuberculosis is allotted three long chapters, and such important diseases as asthma and pneumonia are given the ample space they deserve. The author has arranged his material in so orderly a fashion that in spite of the size of his book it is easy to find any particular information that may be required. Thus the reader interested in little but the therapeutic aspects of disease will find all the information on this score tidily appended to each chapter.

Rightly or wrongly, German works of science labour under a reputation for turgidity and redundance. Prof. Bacmeister's book is a pleasure to read, not only on account of its intrinsic merits, but also because of his crisp and incisive language. Not a word is wasted, and yet sentence follows sentence with an easy fluency seldom found united with parsimony of words.

LA MÉDECINE.

By G. H. ROGER. Paris: Masson and Co. 1920. Pp. 400. Fr.10.

THIS study of the principles of medicine from the standpoint of general biology is opportune, for amid a multitude of detail our conception of medicine as a whole is apt to become confused. The author starts from the text that every vital manifestation, psychic or somatic, normal or pathological, is simply a reaction, immediate or delayed, provoked by an external agent. He describes the evolution of medical science as occurring in three phases—the period of clinical observation, the anatomical period, and the biological period. This is particularly well seen in the history of nervous diseases, and is illustrated by the way that "locomotor ataxy" became "tabes dorsalis" and was finally attributed to a specific parenchymatous degeneration of the lower sensory neuron. His conception of the reaction of the body to disease may be paraphrased thus—an attempt is made to find a new position of equilibrium, which, however, is an inferior one, where the vital processes work with more friction. For if the new position were a better one than that existing in health it would tend to replace it in evolution and to become the normal. Though open to criticism in points of detail, throughout the book the outlook is broad, the exposition lucid, and the grasp of general principles maintained.

X RAY DIAGNOSIS AND THERAPY.

Roentgen Interpretation. A Manual for Students and Practitioners. Second edition. By G. W. HOLMES, M.D., and H. E. RUGGLES, M.D. London: Henry Kimpton. 1921. Pp. 228. 18*s.*

THAT a rather specialised volume such as this should have reached a second edition within two years shows the steadily increasing desire on the part of medical men for further knowledge and understanding of X ray appearances. It was our pleasure to welcome and recommend the first edition, from which the present one differs in no essential particular. The only changes appear to be the correction of minor errors, the omission of a few illustrations, and the addition of several others. These, with some alteration and rearrangement of the text, improve the volume.

As in most radiological publications at the present time, many of the reproductions of radiographs leave something to be desired. Possibly the collotype reproduction of a smaller number of carefully selected radiographs, and the more free use of diagrams, would enhance the value of the illustrations while keeping the cost of production within practicable limits.

Dosierungstafeln für die Röntgentherapie. By FRIEDRICH VOLTZ, Dr. Phil., Physical Assistant, Radiological Section, University of Munich Gynæcological Clinic. Munich: J. F. Lehmann. 1921. Pp. 94. 5*s.* 7*d.*

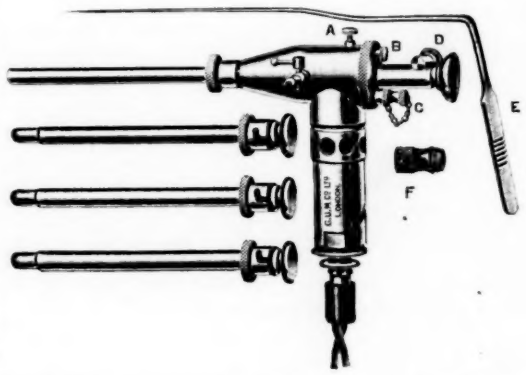
THE author has prepared these tables as a result of a large number of exact measurements and calculations, with the object of enabling a correct dosage in practical X ray work to be obtained without arduous repetition of measurements and calculations in each special case. The tables are based on the Seitz-Wintz system of biological measurement, using X rays filtered through 0·5 mm. of zinc, but they can be used with other systems having a dosage calculated on an exact physical and biological basis. The tables are divided into three groups—(1) dispersion, time and distance factors affecting intensity; (2) absorption, and field activity as influenced by the area irradiated; and (3) appropriate dosage for certain specified conditions. A knowledge of certain physical laws is taken for granted and explanations are given in a form readily understood. If these tables are studied and used by radiologists they will do much to put the subject of X ray dosage on a more scientific and satisfactory basis. A translation is apparently being prepared and will be available at an early date.

New Inventions.

A NEW AERO-URETHROSCOPE.

THIS urethroscope is an improved model of the one I introduced in 1914 (vide THE LANCET, Jan. 10th, p. 114); but the modifications now introduced are numerous and important.

The urethroscope proper consists of two tubes, fixed at right angles to each other, in the form of an inverted letter L (⅂). The vertical limb carries the lamp holder in its lower part, and a bull's eye condenser just below its junction with the horizontal limb. The lamp holder is a short cylindrical fitting, carrying the lamp on its upper and the "flex" from the battery on its lower end. It fits lightly within the vertical tube, and its motion is controlled by a stud which engages in a spiral slot cut in the wall of the tube. This allows the lamp holder to be instantaneously withdrawn for the purpose of inspecting or changing the bulb, and ample play is given for focussing the beam of light. Ventilation is provided just below the position of the condenser to enable the heat generated by the electric bulb to be quickly dissipated. The horizontal tube is



tapered to its attachment with the urethral cannula, while its opposite end is closed by means of the "end-plate." It also carries the tap by which air is admitted to distend the urethra.

The end-plate is a flat plate of brass, surrounded by a deep collar, which is threaded internally, and is screwed on to an external thread cut on the horizontal tube. The inner surface of this plate carries a framework which supports the inclined mirror, while its centre is pierced by a hole 1 cm. in diameter. Into this hole the telescope (D) or the plain eye-piece (F) is screwed. The mirror is adjustable both in a vertical and in a horizontal direction; this is necessary because the filaments in the electric bulbs are rarely absolutely central. Vertical movement of the mirror is effected by turning the milled head (B), while horizontal rotation is obtained by loosening the clamping screw (A) and rotating the whole end-plate. The telescope is of the Galilean type, giving a magnification of 2½ diameters.

The operating attachment has been completely re-designed in this instrument. Below the telescope a small nipple (C) projects through the end-plate. This is covered by a perforated screw cap. Between the nipple and the cap is a rubber washer, and the tighter the cap is screwed down, the more the washer is compressed. Usually the hole in the cap is plugged by a metal pin, attached to the urethroscope by means of a chain. When operating, the pin is removed and the instrument is inserted through the hole. It passes below the mirror, the lower part of which is cut away. The shank of the instrument is grasped sufficiently tightly by the rubber washer to prevent air leaking past. This arrangement is similar to that used in catheterising cystoscopes for preventing water leakage along the side of the ureteric catheters. By this means minor operations can easily be carried out under air distension. At present I only use two instruments when operating through this urethroscope, a probe (E) and an electrolysis needle.

The urethroscope, including the telescope, has been made for me by the Genito-Urinary Manufacturing Co., 66, Margaret-street, London, W.

Wimpole-street, W. J. SWIFT JOLY, F.R.C.S. Eng.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 3, 1921.

Industrial Medicine.

DURING the last 150 years universal changes in our mode of living have been the direct outcome of inventions and of their application in industries. Meanwhile, the environment of those industrially employed has undergone modification; and the study of how the human frame reacts to these changes of environment has arrived. This study, which constitutes industrial medicine, is entrancing, because industry frequently presents an unintended human experiment upon a large scale which can be seen and observed. Contrasts abound: from the hot humid atmosphere of tin-mines to the dry cold of food-storage chambers; from radiant heat emanating from molten metal, with its tendency to cause posterior cortical cataract, to the intense darkness of coal-mines with its attendant nystagmus; from the overcrowded workshop of the tailor, who experiences an excess of phthisis, to the open-air life of the farm labourer; from exaggerated atmospheric pressures, with risk of caisson disease if decompression is too rapid, to diminished atmospheric pressures in aviation, with cardiac, respiratory, and mental disturbances. Here the hearing of a boiler-maker is impaired; there, as in writer's cramp, neuro-muscular coördination has broken down; or some mason working in sandstone succumbs to tuberculous silicosis, while his fellow-worker in limestone escapes unaffected. Or maybe it is the skin which fails to withstand the action of fat solvents or of dehydrating substances; or the liver which undergoes atrophy under the influence of tetrachlorethane or trinitrotoluene. RAMAZZINI, the Paduan, were he still alive, would revel in the opportunities modern occupations present of investigating the occurrence and elucidating the causation of disease. Sir ARBUTHNOT LANE, discussing recently the influence exerted by our surroundings, maintained that the bony system of some labourers, in response to the needs of their occupations, differs more from the normal than does the normal from the skeleton of the higher ape. If physical strain can in this way modify the skeleton, exposure to the widely varying conditions enumerated above must assuredly modify the function of the more easily influenced organs of the body.

Considerations such as these more than justify the existence of a special section of the British Medical Association devoted to Industrial Hygiene. This section does not come together annually, but seized the opportunity of holding a meeting when the Association was gathered together in the industrial centre of Newcastle, and we report the consequent proceedings at length in our present issue. The President, Sir THOMAS OLIVER, whose activities in the field of occupational diseases have earned world-wide recognition, reviewed a century of legislation aimed at ameliorating the health of workers. He pointed to the wholesale reduction in lead poisoning and to the abolition of phosphorus necrosis. He called for further research into such subjects as industrial fatigue and its relation to ill-health, and into the chronic effects of carbon monoxide upon which he has himself already embarked. He stressed the need for the general practitioner to acquaint himself with industrial hygiene on account of his duties in connexion with compensation cases and to enable him to advise his patients and also their employers as to the effect of occupation upon the health of the worker. A notable point in the proceedings was the unanimity expressed and reiterated by Sir T. OLIVER, Capt. W. E. ELLIOT, M.P., Prof. E. L. COLLIS, and Sir KENNETH GOADBY in their papers, and by those who took part in the discussions, on the need for industrial convalescence. All agreed that the work carried out by the Ministry of Pensions on behalf of those incapacitated in the field of war should be continued for those disabled in the field of industry. Prof. COLLIS estimated that at any time there must be 58,000 limbless civilians needing occupational re-education; while a far larger number, still possessing some earning capacity, are precluded from full-time employment on account of different forms of ill-health and disability. These workers are for the most part ready to work so far as in them lies, and would willingly escape from the industrial scrap-heap to which they are relegated; they feel the ignominy of being a burden upon others and often upon the rates.

Prof. COLLIS presented, in the form of debit and credit, the value of medical services to industry. His argument is conclusive; but we suspect that he presents the case in this way rather to attract attention than with implicit reliance upon "the few short sums in arithmetic" which are given. The point is clear that employers of labour must not look upon their contributions to national health insurance as other than an expensive effort at patching up those who have broken down in health, and in no way as relieving them from the more directly paying proposition of maintaining in health and efficiency those upon whose productivity they rely. Sir KENNETH GOADBY carried the discussion into one particular realm of industrial medicine, which is at present provoking considerable controversy—viz., the question as to whether the continued use of lead compounds in paints should be prohibited. Apart from its controversial aspect, his contribution is of value in disclosing the important part played by the volatile constituents of paints in causing ill-health among painters. The argument is probably sound that, if some non-poisonous material were substituted for lead compounds as the body of paints, this form of ill-health would persist; but Sir KENNETH GOADBY does not consider the possibility of small doses of lead accentuating the action of these volatile constituents. There is a further point; if white lead were no longer used in paints, the manufacture of white lead itself would almost cease with its attendant dangers, and there would be some reduction in the amount of lead smelted. The consequent reduction in risk of plumbism in these industries, quite apart from the effect upon painters, is a matter of moment. Occupational hygiene will be benefited by the reliance of industrial managers upon expert statistical and medical advice. Few can doubt that health and contentment are closely correlated and that labour unrest is but the psychological expression of abnormal physiological functions. When once captains of industry perceive that the medical profession holds the key to labour unrest a demand for its services must arise which there are far too few trained to-day to meet.

Ophthalmia Neonatorum.

IN opening a discussion on the Causes and Prevention of Blindness at the Ophthalmological Section of the Newcastle meeting, Mr. N. BISHOP HARMAN made some trenchant remarks on the prevalence of ophthalmia neonatorum. We entirely agree with him that more might be done to prevent damage to sight from this cause in spite of the optimism of the Ministry of Health, as shown in a recently issued report of the Principal Medical Officer:—

"The good results reported, the large proportion of total cures (due in part to the number of slight or doubtful cases notified), the almost complete absence of total blindness, and the relatively few cases of damaged vision, speak well for the care with which the disease is treated and nursed."

The reference is to the reports of health officers for the year 1919, but the reports for 1920 tell a different story. Fortunately, if we may say so, the blinded infants in many cases do not survive. Even should local authorities be too optimistic, there is an army of child welfare workers in the field to remind them of the real position. And it may be added that the Second English-Speaking Conference on Child Welfare, held in London in July, unanimously passed a resolution drawing the attention of the Ministry of Health to the inadequate methods of prevention and treatment at present prevailing.

There are only three possible lines of defence: (1) treatment of the vaginal disease of the mother; (2) treatment of the eyes of the infant at birth; (3) early skilled treatment of the disease. Mr. HARMAN dealt with the first and the third of these, saying: "Prevention of the disease can be secured by the treatment of the vaginal disease of the expectant mother; this is the one and only certain means of prevention and it is within our power to accomplish this desirable end." It is no easy matter, however, to get hold of the expectant mothers for treatment; it may become easier as the work of antenatal clinics grows. Most ophthalmic surgeons pin their faith to the treatment of the infant's eyes at birth with a colloidal silver solution. At the Conference already referred to, Dr. JANET CAMPBELL, senior medical officer for child welfare of the Ministry, gave figures for 50 unselected maternity homes which showed 74 cases of ophthalmia among about 9000 births, a highly unsatisfactory percentage. American representatives stated that systematic treatment of the infant's eyes had, practically speaking, abolished ophthalmia in certain districts of the United States, and it would be well that the procedure adopted should be made known in plain language and promptly. Mr. HARMAN'S remarks on the third line of defence deserve special attention. "What is now needed," he said, "is the establishment of such medical arrangements that diagnosis and treatment can be made as swiftly as the fire-brigade can be brought in when there is an outbreak of fire in our homes." He would like to see established in the centre of every convenient area an ophthalmia unit. Prompt removal to hospital of mother and child is already a fact in Liverpool, while in London the benefits of hospital treatment are almost nullified by tardiness of removal.

This question of delay is crucial. Medical officers of health and ophthalmic surgeons know full well that there is frequent failure to secure skilled treatment at once. The case often reaches the ophthalmic surgeon after a spell of inefficient treatment during which irreparable damage to the eye has been done. The birth attendant may see so little of these cases as not to notice the danger signal or to recognise the need for a "fire-brigade." To some extent the medical schools and hospitals are at fault. The Ophthalmological Section at Newcastle passed a resolution in favour of the appointment of ophthalmic surgeons to all lying-in hospitals. If this suggestion be acted upon a great step forward will have been taken in the education of medical students and midwives on the serious nature of this disease; the means to be adopted for its prevention and the need for its prompt treatment in the event of a breakdown of the first two lines of defence will become apparent.

The Combined Treatment of Malignant Disease.

THE Council of the British Association for the Advancement of Radiology and Physiotherapy, of which Dr. ROBERT KNOX is president, Dr. ALASTAIR MACGREGOR and Dr. F. HERNAMAN-JOHNSON joint hon. secretaries, has taken up the reconsideration of the situation in regard to the treatment of internal cancer, suggested by a leading article in THE LANCET of July 2nd. Earlier in the year we drew attention to the remarkable work on deep X ray treatment of uterine carcinoma at the Frauenklinik in Erlangen, work which for one reason or another had not attracted in this country the attention which it merited. Admittedly no new principle was involved, but Prof. L. SEITZ and Prof. H. WINTZ had been successful in applying to the diseased uterus quantities of X rays of a higher degree of penetration than those hitherto employed and in devising a careful system of measuring the dosage. The Council of the B.A.A.R.P. is in full agreement with us that this constitutes a real contribution to progress on the part of the Erlangen school.

But whilst thus agreeing with our statement of the merits of the Erlangen technique, the Association takes us to task for what it regards as an ill-advised pronouncement and disagrees with emphasis with the conclusions there expressed. "The time has *not* yet come," so runs the statement issued to the lay press, "when radiotherapy may be regarded as the first choice in the treatment of the majority of cases of cancer." We never said that it had, as any careful reader of the article in question may see for himself. Assuming the claims for the irradiation of malignant cases to be substantiated, the advantages to be gained will be readily appreciated. Cases would come under observation at an earlier stage. These were the actual words we used, and the statistics relating to the treatment of cancer by excision, whether or not supplemented by radiation, are not so rosy as to exclude the need for carefully exploring other paths. In a survey of these statistics given in the current number of *Medical Science*, over the initials of Mr. W. G. SPENCER and Dr. C. LILLINGSTON, it is stated that excision in cancer of the breast fails to cure in more than half the cases, while the plea that failure is attributable to the excision being done too late is suggested to be untenable in many cases. Statistical evidence in regard to the value of radiation is singularly wanting. Writing in 1919, Mr. SAMPSON HANDLEY admitted that for the 14 preceding years every case of breast cancer upon which he had operated had received a prophylactic course of X rays, and he presumed that the rays were calculated to arrest the permeation of the disease through lymphatic

spaces in areas immediately outside that of the excision, but up to the present time no statistical publication of results obtained in this country and extending over years is available. F. BLUMENTHAL'S analysis of results at the Charité in Berlin did not show in 1919 an advance in the success of radiation over that obtained in 1915, and on the whole are not appreciably better than some series of results attained by excision alone. At the Surgical Section of the annual session of the American Medical Association held at Boston last June it was agreed that only 25 to 50 per cent. of patients survive excision of the breast for cancer more than three to five years.

Hasty opinions on medical matters should certainly never be given wide publicity, and cancer, unfortunately, is a field in which public disappointment at unfulfilled promises may readily bring discredit on promising fields of treatment. But it is no good closing our eyes to the fact of a relative want of success in our surgical methods of dealing with a disease of increasing dimensions. A week or two ago we called attention to the picture drawn from the *Bulletin* of the League of Red Cross Societies of cancer as it really is. Radium may do something sometimes, morphia may help a little at the end, but knowledge, if it is given to the people in time, can save these lives and all this suffering. Our aim in publishing these articles was twofold: first to insist on the sufferer from cancer coming under medical observation at the earliest possible stage in the malady; and secondly, to ensure a thorough exploration of all the resources of medicine in dealing with the disease. Between the surgeon and the radiologist coöperation should be of the most intimate kind. Obviously the slightest antagonism would disadvantage medicine as well as the patient. Advancement of radiology, as the Association has clearly seen, is part and parcel of advance in medicine as a whole.

The Census of 1921.

THE preliminary report on the census taken last June has been issued with commendable promptitude, and although only the simplest elements are yet available—enumerations by sex and area without distinction of age or civil state—the figures require some comment. The population of England and Wales enumerated in June, 1921, exceeds that of April, 1911, by 1,814,750 persons, corresponding to a decennial rate of increase of 4·93 per cent., the lowest rate yet recorded, less than half that of the previous decennium and not a third of the maximum increase which took place between 1811 and 1821. This rate of increase is, however, far greater than that of France, whose population, including that of Alsace and Lorraine, has diminished 5·5 per cent., and greater than that of Switzerland (an addition of 3·4 per cent.) but less than that of Sweden (an addition of 8·7 per cent., and a greater rate than in the previous decennium). The figures for three of our daughter States, the Australian Commonwealth, New Zealand, and the Union of South Africa, are available, and each shows a percentage increase of some five times the mother country's rate (Australia 21·8, New Zealand 20·8, Union of South Africa 19·2—in each case aborigines are excluded).

The war has, of course, been mainly responsible for the great slackening in the rate of increase, although, apart from the war, the declining birth-rate would have had an effect. The excess of births over deaths fell from just over 4 millions to just over 3 millions, and this is more due to a decline of births than to an increase of deaths; the former diminished by 1,015,233, the latter increased by only 21,135. The direct losses of the war fall, for the most part, under another heading, which, with perfect accuracy but to the lay reader with a grim humour, runs: "Loss representing balance of outward over inward passenger movement," and amounts to 1,193,750. We know whither the great majority of those outward moving passengers journeyed. The distribution of the population does not differ in broad categories from that of ten years since. In 1911 78·1 per cent. were enumerated in urban and 21·9 per cent. in rural districts; in 1921 the figures are 79·3 and 20·7. The report says that "the present rural district population is slightly less numerically than the similar 1911 population. The increase within the existing rural areas, however, is not seriously below the mean for the whole country, and indicates that the actual diminution is due merely to the normal growth of urban centres and not to any serious migration from country to town, such as that which took place during the latter half of the last century and which is reflected in the intercensal changes shown for the decennia between 1881 and 1901." This statement may ultimately need qualification if we give to the word "country" a less technical meaning. For instance, in the Administrative County of Essex the rural districts which return an increase of population are, with the possible exception of Billericay, either within the spheres of influence of industrial centres or, like Epping, outer suburbs of London. The strictly agricultural districts, such as Belchamp and Bumpstead, have declined.

The enumerated population of the Administrative County of London is less by 38,436 persons than in 1911, but Greater London has increased by 3·1 per cent. and now includes 7,476,168 persons. Amongst the great towns with smaller populations than in 1911 are, rather surprisingly, six manufacturing cities in Lancashire, Blackburn, Bury, Burnley, Oldham, Bolton and Rochdale; the reporters find it difficult not to associate these decreases with the prodigious increases found in Blackpool (64 per cent.) and neighbouring holiday resorts. A result of the war is an acceleration of the change in ratio of females to males, which was 1055 in 1881, 1064 in 1891, 1068 in both 1901 and 1911, 1095 in 1921. Sussex and Surrey return the highest (1273 and 1187), and Glamorgan and Monmouth the lowest (964 and 939) proportions of females. These are, perhaps, the most striking of the preliminary results. It would be idle to speculate upon the hygienic consequences of what has occurred in the absence of details which the subsequent reports will reveal. In particular, we refrain from either pessimistic or optimistic comments upon the increase. Much of the copious "literature" upon "race suicide" and "birth control" has no scientific value.

CANCER RATES IN EDINBURGH AND MANCHESTER.—The medical officer of health of Edinburgh, dealing with the city death-rates from cancer for every year since 1898, has shown that an incidence of 0·88 per 1000 of population for that year rose to 1·10 per 1000 in 1908, to 1·35 per 1000 in 1918, and to 1·39 per 1000 in 1920. Edinburgh is not peculiar in this respect. In an industrial district like Manchester 4 per cent. is almost exactly the annual rate of increase. In the country cancer is much more rare. The proportion of men to women sufferers is now 1 to 1·3, and in Manchester at present is 405 men to 463 women. Between 1899 and 1919 the death-rate in Manchester increased by 91 per cent., but there are certain factors which somewhat mitigate the disproportion.

Annotations.

"Ne quid nimis."

THE OPIUM TRAFFIC AND THE LEAGUE OF NATIONS.

IN THE LANCET of April 30th reference was made to the position in which the effectuation of the Opium Convention of 1912 then stood, both in regard to our own national undertaking in the matter of legislation and also, what is not less essential, the international aspect of the question. The regulations made by the Home Office under the Dangerous Drugs Act, 1920, as now revised, came into force on Sept. 1st. The report of the Advisory Committee of the League of Nations which met in May has been approved by the Council of that body, and will be laid before the Assembly which meets at Geneva this month. The official *Monthly Summary of the League of Nations*, issued from Geneva on June 1st, purported to give an account of the work so far accomplished towards putting the Opium Convention into force. It is there naively remarked: "Thus it seemed to the Committee that the Hague Convention had not been put into practice everywhere, and that, moreover, its recent application did not permit serious conclusions to be drawn as to its efficacy. While certain Governments had enacted rigorous measures of control, others had not yet adopted the Hague Convention." A questionnaire has been circulated to all the Powers with a view to ascertain what really has been done towards restricting the use and stopping the abuse of opium, morphia, cocaine, and other dangerous drugs. The replies, when received, will probably show that the statement that the Convention "had not been put into practice everywhere" might more correctly have been rendered, "the Convention has not been effectively put in force anywhere." We read of increase of acreage under poppy cultivation in recent years in China and India; of tons of British-made morphia being exported to the Far East; of the wholesale smuggling of morphia from Japan into China, as well as the manufacture of large quantities of morphia in Japan from Indian, Korean, and Japanese opium.

In THE LANCET of May 29th, 1920, we urged the need for "control at the source of the fabrication of these drugs," and pointed out that "over-production must inevitably lead to illicit consumption with its attendant social and moral degradation." We are accordingly glad to learn from the *Monthly Summary* for July that the Council has taken a step in advance of the Advisory Committee's report towards reducing production of these drugs to what is required for "strictly medicinal and scientific purposes," and to this end has invited the Committee to determine what amounts of opium, &c., are required for these legitimate uses. We further note in the August *Monthly Summary* that the delegate of India on the Advisory Committee seems to interpret the Convention as placing no restrictions on raw and "prepared" opium like those placed upon traffic in morphia, &c. He admits that the eventual "suppression" of the fabrication of and traffic in opium "prepared" for smoking was contemplated by the Convention, and that "medicinal opium" is to be restricted to "medical and legitimate purposes." The same restriction is apparently to apply to all preparations of opium containing more than 0·2 per cent. of morphia. It is not clear, therefore, whether the contention really is that, notwithstanding these restrictions on the derivatives of opium, no restriction is to be applied to the cultivation of the poppy in India or the raising from it of "raw opium."

On Nov. 25th, 1920, it was stated in the House of Commons that "exports of opium, morphia, and cocaine, and their preparations" to certain countries were only licensed "on production of a certificate signed on behalf of the Government concerned that the consignment is required exclusively for legitimate scientific or medical purposes," and that the extension of similar procedure to other countries was being negotiated. It will be interesting to know how far this system is now in effective operation, whether it applies to exports of opium from India, and what results have been achieved as indicated by the figures of exports and imports of these dangerous drugs compiled by the Board of Trade. Meanwhile it is satisfactory to learn that under the Postal Union Convention, recently signed at Madrid, it is prohibited to send by letter mails any of the narcotic drugs in question, and the parties to the Convention have bound themselves to propose to their respective legislatures to enact measures to inflict punishments for infringement of this regulation.

FIXATION OF COMPLEMENT IN TUBERCULOSIS.

A HANDY test for active tubercle would be a great boon to medicine and it is largely for this reason that, of the many interesting questions which centre around fixation of complement in tuberculosis, those which relate to its behaviour in diseases other than tuberculosis are the most practical. Before the war Besredka and Inman showed that with the antigen prepared by the former cross-fixation with syphilitic serums was liable to occur. Subsequent researches have now enlarged the issue and two separate questions are, in reality, involved: (1) Will the serums of patients suffering from diseases other than tuberculosis give positive reactions, and if so, what diseases? (2) Will other antigens give a positive reaction with tuberculous serums, and if so, what antigens? These questions have arisen in the past with regard to the Wassermann reaction and, inasmuch as bacterial infections are commoner in this country than are protozoal, they may be more difficult to answer in tubercle than in syphilis. Fixation in diseases other than tuberculosis has engaged particular attention in America, where large series of cases have been dealt with; and now the second question, that of the non-tuberculous antigen, is being raised. Urbain and Fried,[1] working in Besredka's laboratory, took known tuberculous serums and tested them against various bacillary antigens, including streptococcus, staphylococcus, pneumococcus, *B. anthracis*, *B. subtilis*, *B. diphtheriæ*, and members of the enterica group. One serum, that of an immunised horse giving a positive reaction with Besredka's antigen, gave uniformly negative results with these various bacillary antigens, whilst the serums from 20 tuberculous patients gave positive results in three instances with the antigen of *B. diphtheriæ* and in two instances with that of *B. subtilis*. In the next group Urbain and Fried used Besredka's tuberculous antigen and antiserums of horses immunised against various bacterial diseases, such as plague, tetanus, anthrax, and diphtheria. Antidiphtheritic serum was the only one which gave a positive result. In the third group Besredka's antigen was tested against human serums from patients suffering from various bacterial (enteric, erysipelas, osteomyelitis, diphtheria, &c.) and non-bacterial diseases (carcinoma, sarcoma, mental diseases, &c.). Significantly enough, the only serums to give positives in this third group were those of four cases of diphtheria, all of whom had recently had antidiphtheritic serum administered. In all instances, however, the positive results obtained do not appear to have been so strongly positive as the true fixation result with a tuberculous antigen and tuberculous antibody.

We print in our present issue a further report to the Medical Research Council by Dr. A. Lisle Punch, in which he records the results of complement-fixation tests made with the special technique described by him in THE LANCET last year (1920, ii., 647).

[1] Annales de l'Institut Pasteur, 1921, xxxv., 294.

Every laboratory worker will appreciate the difficulties encountered by Dr. Punch in devising a test containing five variables in such a way that the interpretation shall be unambiguous. Antigen, patient's serum with its varying anticomplementary power, guinea-pig's complement, haemolytic serum, sheep's corpuscles—all of these possess complicated colloidal properties about which we, as yet, know little. Dr. Punch's present paper raises another group of questions—namely, the nature and right employment of controls. He records two separate groups of cases. In one series of 50 cases a colleague at Brompton made the clinical diagnosis, the author himself performing the laboratory test. In the other series of 185 cases the author again made the complement-fixation test, but the clinical investigator is not stated. The results in the two series are very different, and Dr. Punch himself offers no explanation of the divergence. If identical laboratory technique was used in both cases, presumably the explanation must be sought on the clinical side of the investigation. Should the same person make both the clinical and the laboratory tests he is faced with the possibility of subconscious bias in favour of one or of the other. Dr. Punch has eliminated what may briefly be called laboratory bias by asking Dr. A. Fleming to number the serums and retain the key to the numbering until the test was complete, so that he was unaware while estimating the complement fixation of the provenance of the serum. But he does not state what precautions were taken on the clinical side in this series of 185 cases, especially in regard to those in which the diagnosis of tubercle was considered doubtful. In a disease of such protean manifestations and ubiquitous distribution as pulmonary tuberculosis it is on the clinical side that difficulty in interpretation might be expected. The evolution of a test such as this is obviously expedited by placing both clinical and laboratory records in the hands of an assessor with a philosophic turn of mind.

DENTAL DECAY IN THE YOUNG.

IN another part of this issue we survey the main chapters in the report for 1920 of the School Medical Officer for the County of London. An important section in this report treats of dental decay in school children, a matter of urgent interest when we consider the far-reaching effects of this disease in after life. Dr. Hamer refers to the suggestion made by Dr. James Wheatley, of Shrewsbury, that the compulsory change in diet during the war—namely, the halving of the sugar ration, the partial elimination of sweets, the addition of offal to the flour, and the increased mastication of crusts and staler bread—produced a notable alteration in the condition of the teeth of the Shropshire school entrants, regretfully adding that the London figures lent no support to Dr. Wheatley's suggestion. Six months ago Dr. Wheatley himself, as the result of further investigation, admitted that the improvement fell far short of what his original figures indicated, although he still can trace some improvement, partly, he believes, resulting from the war conditions referred to, and partly owing to an educational campaign undertaken in the county.

Without trying to adjudicate whether or no Dr. Wheatley was over-sanguine, it is relevant to, discuss whether the plan of campaign conducted by Dr. Wheatley and Dr. Sim Wallace is on the right lines, and, if it is not, to formulate a better one. All of us, according to Dr. Hamer, hold dental decay to be a preventable disease, though there is no corresponding unanimity in respect of the methods to be used. We all recognise its evil effect on the physique of the nation, and the absurdity of establishing innumerable costly centres for treating, at the best, a fraction of the trouble. We are indeed almost forced into the position either of ceasing to talk about dental decay as preventable, or of formulating a complete campaign to prevent it. In an interesting paper read before the Central Counties Branch of the British Dental Association in June, 1920, Dr. Wheatley assumed general agreement on certain broad issues. His first two points were as follows: 1. That decay of teeth in its initial stages is caused by acid decomposition of carbohydrate food in contact with the teeth, and in no other way. 2. That vigorous exercise of the jaws is necessary for the proper development of the jaws, and consequently for the regular arrangement of the teeth. His fifth point was that there is reason to think that the development of the jaws and the enamel of the teeth is to some extent dependent upon the presence in the food of vitamin A, or something associated with it. Difference of opinion on the fifth point is not of vital importance, for babies ought to be breast-fed, and the breast-fed baby naturally gets its proper supply of vitamin and the vigorous sucking exercise necessary for the development of the jaw. Further, the weanling needs the right kind of fat to avoid rickets and other developmental disorders.

The campaign in Shropshire, which has been conducted by the Education Committee since 1911, has been founded chiefly on Dr. Wheatley's first two points. The main theme of the leaflet issued is that if starchy or sugary food can be prevented from sticking to the teeth there will be no decay, and the advice is on the following lines: 1. The giving of food to the weanling and little child that will need mastication; the avoidance of pappy foods, and of drinking between mouthfuls of food. 2. Sweets never to be given between meals, or as the last food of a meal. 3. Each meal, especially the last of the day, to be finished with a tooth-cleansing food. A list of starchy, sugary and tooth-cleansing foods is given at the foot of the leaflet. The Derbyshire Education Committee issues similar advice in the form of a card. In the paper already mentioned Dr. Wheatley makes a strong plea for the Ministry of Health to lead a national campaign against dental decay founded on our present knowledge, and to place the cause and prevention of dental caries in the forefront of its scheme of research work in order to clear up points of doubt.

Let no one think the campaign will be a small affair. It sounds simple—to keep our teeth free from starch and sugar between meals, and so get rid of perhaps the greatest cause of ill-health and inefficiency, but we shall be up against ingrained habits and pleasures. Anyone whose recollections go back 40 or 50 years knows how enormously the habit of sucking sweets has grown during that time. It may be argued that a habit which has increased so rapidly may decline as rapidly if good reasons can be given against it; but the reasons must be good ones, the Ministry of Health will have to give an effective lead, and medical practitioners and dentists present a united front.

THE SWIMMING BATH AND CATARRHAL OTITIS.

Dr. K. Amersbach,[1] director of the University clinic for diseases of the ear, nose, and throat at Freiburg in Breisgau, remarks that though swimming-bath conjunctivitis was described as long ago as 1899 no connexion has hitherto been suspected between this condition and disease of the ear. Recently, however, during an outbreak of swimming-bath conjunctivitis at Freiburg numerous cases of catarrh of the Eustachian tube were seen at the out-patient department of the clinic. The patients chiefly belonged to a swimming club, and most of them were also suffering from conjunctivitis. The most striking feature about the tubal catarrh was its obstinate character and tendency to relapse. In almost all the cases the ear trouble developed about a fortnight after the onset of the conjunctivitis. The patients complained of a feeling of pressure in the ear, tinnitus of varying degree, autophony, and more or less impairment of hearing. The drum-membrane, which was otherwise quite normal in every case, was drawn

[1] Deutsche medizinische Wochenschrift, August 4th, 1921.

in. At the height of the disease the Eustachian tubes were impermeable even on vigorous inflation. It was a remarkable fact that none of the patients had recently suffered from a cold in the head or a sore throat. Examination in some cases showed a slight chronic rhinitis, but no signs of acute inflammation or much swelling of the mucous membrane. On the other hand, purulent catarrh, with or without swelling of the adenoid tissue in the nasopharynx, as well as redness and swelling of the opening of the Eustachian tube, were frequently observed. Dr. Amersbach seems to have been discouraged from making any bacteriological examination by the fact that investigations of the kind undertaken by ophthalmologists on swimming-bath conjunctivitis had been inconclusive. He suggests that the involvement of the Eustachian tubes in swimming-bath tubal catarrh may occur in one of two ways—namely, either by infected lacrymal secretion reaching the tubes as the result of blowing the nose or swallowing, or directly by infection of the pharynx by the bath water. The affection is most frequent in young persons, but older individuals are not immune, as three of the cases were over 36 years of age. Treatment consisted in the application of the usual methods for dealing with catarrh of the Eustachian tubes.

THE VISCERAL SENSORY NERVOUS SYSTEM.

MORE attention has been given by investigators to the efferent nerve paths through which impulses reach the viscera from the central nervous system than to the afferent sensory paths from viscera, and to the consequent remarkable reflex effects that one viscus may exert on one or more of the other visceral organs. A recent systematic study[1] from the University of Chicago fills in this gap to some extent. In it A. J. Carlson and A. B. Luckhardt record a series of observations on several classes of vertebrates, beginning with amphibians and reptiles. Starting from the fact that in man strong contractions of the empty stomach can produce reflex effects on the cardiac and vasomotor centres, the authors propose to determine the effects which the afferent visceral system exerts on the skeletal muscles, the respiratory, intestinal, and urinary systems, and on the heart and blood-vessels. In frogs, *Rana pipiens* and *catesbiana*, tonus is well marked, and under certain circumstances rhythmical contractions may occur, and even the entire lung be emptied of its air. Section of the sympathetic nerve alone has no effect on the lung tonus, but section of the vagus caused sustained hypertonus of the corresponding lung, and on electrical stimulation of the peripheral end of the vagus the tonus is inhibited and the lung returns temporarily to the normal condition, the rhythmical contractions disappearing. The authors conclude that in the frog the inhibitory fibres in the pulmonary branches of the vagi are in continuous or tonic activity, and thus limit the peripheral motor lung automatism; for, if these influences are cut off, the lung falls into a state of sustained or continued tetanus or hypertonus. Stimuli of all kinds influence this pulmonary mechanism; reflex contraction of the lung can be brought about by stimulation of the skin of the upper jaw, slight mechanical stimulation of the anterior nares, the urinary bladder and cloaca, by electrical stimulation of the urinary bladder, mesentery, œsophagus, pyloric end of the stomach (but not the fundus end), and duodenum, and of the central end of the brachial nerve; indeed, stimulation of almost every sensory nerve is followed by contraction of the lungs. After section of the vagi nicotine causes the lung tonus to disappear for a moment owing to primary stimulation of the inhibitory mechanism. Large doses of nicotine, however, cause contraction, probably due to direct muscular stimulation. Atropin even in large doses scarcely, if at all, paralyses the inhibitory fibres, adrenalin at once arrests the rapid rhythmical contractions and the increased tonus.

The lung automatism and reflexes were then studied in the salamanders—Necturus and Axolotl. These, besides larger gills—their chief respiratory organs—possess two long muscular sacs or "lungs" which communicate by means of a small aperture with the pharynx. The results obtained correspond closely to those obtained with the frog. It is known that the lungs of reptiles respond to direct stimulation and that the lung musculature is under the influence of the vagus; indeed, one vagus may, in some species, influence both lungs, and rhythmical contractions of the lung have been observed as long as the vagi and bulb were intact, while in turtles the isolated lung may exhibit rhythmical activity. The authors investigated two varieties of turtles and one species of snake. Section of the vagus at once abolishes the normal contractions of the lung on the same side, but those on the opposite lung only temporarily, due to the fact that the connexion with the bulb on that side is still maintained. Strong stimulation of the peripheral end of the vagus in turtles causes contraction or even complete tetanus. The lung-vagus contains both motor and inhibitory fibres, so that stimuli affecting the lung may cause one or other effect. Stimulation of peripheral sensory nerves of the skin, intestinal canal, and urogenital system always causes increase, never inhibition, of the contractions of the lung, while the skeletal musculature involved in the respiratory act is often inhibited by the same stimuli. Much the same results were obtained in the snake investigated—*Eutenia elegans*.

Taken broadly, the influence of the central nervous system on the reptilian lung is chiefly motor, in the frog chiefly inhibitory, but also motor, whilst in the salamander it is exclusively inhibitory. In frogs and salamanders there is such a well-developed automatism of the lung that when the central inhibition is suppressed (vagotomy or destruction of the bulb) the lungs pass into a tetanic condition, while in reptiles lung automatism primarily depends on the motor impulses passing in the vagus, so that after decerebration or vagotomy the lungs are flaccid and quiet. The methods used are fully described in the text, and we look forward with interest to the results obtained in other classes of vertebrates.

[1] American Journal of Physiology, vols. liv. and lv., 1920–21.

FAMINE IN RUSSIA: AN INTERNATIONAL CONFERENCE.

Mr. Lloyd George described the famine in Russia as the most terrible visitation that had afflicted Europe for centuries. At the conference called by the joint council of the International Red Cross and the League of Red Cross Societies, which met in Geneva on August 15th and 16th, twenty governments and Red Cross societies were represented, in addition to several international bodies, leading relief agencies, such as the League of Nations, the International Labour Bureau, the Friends' War Victims and Relief Committee, the Imperial War Relief Fund, the Save the Children Fund, and the Parliamentary Relief Committee. The chair was taken by Mr. Gustave Ador, who was supported by Sir Claude Hill, the acting-director of the League of Red Cross Societies. The most interesting speeches came from the delegates representing the famine stricken countries. Mr. Chavichvily, the delegate of the Georgian Red Cross, painted a lurid picture of the sufferings of his country since the Bolshevist invasion. A population of over three millions is practically without food, people are dying in the street, and there cannot be found the means to bury all the dead. Suicide and epidemic disease swell the total of these. Among the first victims of cholera must be counted the Catholicos, the head of the Georgian Church. Dr. Bagotzky, the representative of the Soviet Red Cross at Berne, was present on the second day and transmitted a report through Mr. Paul Birukoff, at one time secretary of Leo Tolstoy and his official biographer, who represented at the conference the Pan-Russian

Committee organised in Paris. According to these statistics, the situation, especially as regards epidemic diseases, would appear to be less serious than some reports have stated. Officially there are 36,000 cases of cholera, of which 60 per cent. are in the towns. The typhus incidence has continued to fall throughout the summer, though it may be expected to rise again next winter. Although plague is rife in Persia, a strong sanitary cordon has up to the present preserved the immunity of Russia. As regards the famine it is stated that the annual excess of production of corn over the need in the Volga district amounting normally to 60 million poods, has this year been converted into a deficiency of the same amount; 120 million poods are therefore needed to meet the famine requirements. 150,000 people have left their homes. Of these 50,000 have been "repatriated" into Siberia and are now stabilised. The remainder will be "repatriated" into the less necessitous districts.

The resolutions adopted by the Geneva conference provide for the creation of a relief commission to coördinate the action of the official and voluntary relief agencies. In view of the magnitude of the task, emphasised by Sir Claude Hill, who has had experience of two serious famines in India, the coöperation of all governments was considered essential. The commission will therefore consist of delegates from governments as well as from Red Cross societies and voluntary associations. Dr. Nansen, Mr. Hoover, and a representative of Mr. Hoover nominated by him, were appointed high commissioners, with full authority to make the necessary preliminary agreement with the Soviet Government concerning the administration of relief. Dr. Nansen has already telegraphed his acceptance of this post. The Commissioners are instructed to work in close coöperation with the Russian Government and Russian voluntary organisations.

LATE EFFECTS OF GASSING OR TUBERCULOSIS?

Dr. J. B. Hawes has an important article on this subject in the *Boston Medical and Surgical Journal*. He points out that while we know a great deal of the immediate effects of the gases used in the late war, we know little of the late effects. We know that they have irritative and escharotic effects on the respiratory tract, and that contraction of the cicatricial tissue produced often leads to serious mechanical difficulties, both in the ingress and egress of air and in the pulmonary circulation. We also know that the gases have a certain selective action. Mustard gas affects chiefly the upper air passages; chlorine injures the entire respiratory tract; phosgene, though least severe in its immediate effect, often leads to serious injury of the lung tissue. The basis of the changes produced by the gases is a proliferative fibrosis, which destroys to a greater or lesser extent the protective powers of the bronchi, and leads to invasion by organisms. While tuberculosis may play a part in the invasion it is, in Dr. Hawes's opinion, a very minor one. The X rays show a characteristic picture—increase in the tissues round the hilus, especially peribronchial, extending towards but rarely into the parenchyma of the lung, and more towards the bases than upwards. The apices are usually clear. There are often localised areas of fibrosis. The signs and symptoms form two groups—pulmonary and constitutional. Among the first are cough, expectoration, hæmorrhage, pain, or a sense of constriction of the chest; dullness, usually at the bases and due to thickened pleura; diminished voice and breath sounds; râles of every variety. Among the second are loss of strength, shortness of breath, and a psycho-neurosis (a tendency to exaggerate symptoms with increased reflexes). Fever, wasting, anæmia, and other symptoms characteristic of tuberculosis are absent. Yet in Dr. Hawes's experience the majority of the cases are diagnosed as tuberculous. Another characteristic of these cases is sudden acute febrile attacks, often without cough or sputum, which disappear as suddenly, leaving intense lassitude for a considerable time. Out of 35 men definitely diagnosed as tuberculous, or suspected to be so, Dr. Hawes could confirm the diagnosis in only 8. Localised dullness with or without sticky râles at the bases of the lungs was the striking feature of physical examination. Additional evidence against tuberculosis was that the sputum was constantly negative for the bacillus. The treatment does not differ much from that of pulmonary tuberculosis, except that the patients should not be sent to a sanatorium or hospital. Dr. Hawes recommends rest away from a medical atmosphere, and sympathy and encouragement. These bring about the best results.

GERMAN NAVAL HYGIENE.

BEFORE the war the publication of the annual health report of the German Navy was quite an event for students of naval hygiene, as it always had an article stating the more important hygienic advances made during the year in the ships, and no other such article was published elsewhere. These reports were always published late, not, like those of the British Admiralty, shortly after the end of the period, and the books for 1911–14 have only recently come to hand; but they still have interest. In 1911–12 officers were again being accommodated aft in ships. Ozonisation of the air continued to give satisfaction. Low-pressure steam was preferred for heating, and radiators were being fitted that could be easily cleaned, to avoid the scorching of adhering dust, which causes smell. Electric heating was only employed in U-boats and in the Kaiser's suite in the new *Kaiser* battleship. Ice machines were being installed, and more refrigerating chambers permitted the men's food to be oftener fresh. When biscuit had to be issued it was made into puddings. Bakeries were to be on the upper deck in future. Men of the High Sea Fleet at sea usually drank 5 oz. of beer, each of them, daily. Other drinks like lemonade, Maggi's consommés, and cocoa were offered them in the canteen to wean them from beer. The widespread but evil habit of cigarette-smoking had spread so far that men took up on an average two cigarettes each per day, besides what they brought on board, but canteens sold chocolate, sweets, and buns cheap, which reduced tobacco sales. Nearly every man had a wash-hand basin of his own which he kept in his locker, consequently boils were fewer. Seamen used the stokers' bathroom one day a week, and the canvas bath was constantly rigged on deck. Permanganate solution was regularly issued as a mouth-wash; water was replacing oil in the sparge pipes of urinals. A second X ray apparatus was intended to be sent afloat, the first, in *Deutschland*, having been a success. U-boat crews got four weeks leave in the year (others probably only a fortnight). On hot stations men were allowed to sleep on deck, but they must wear night clothing with cummerbunds, and fruit was rarely allowed on board unless it could be dipped first in boiling water to sterilise its exterior. Extra closets were being fitted in ships with dysentery cases to secure isolation and lessen infection. At Tsingtau vessels under refit were disinfected, cleaned, and aired. At the Litsun dispensary at Tsingtau there attended 4254 Chinese out-patients.

In 1912–13 attention was being given to protect cabins and sick bays against heat and noise. Sick bays were to have a system of ventilation of their own, with supply and exhaust, independent of the ship's system, to keep them sweet though ports are closed in a sea-way. Metal filament lamps were being used to improve lighting. In the *Kaiser* class fresh water was piped to kitchens, bakeries, lavatories, and sick bays; individual wash-basins were being further issued, and tiles for bathrooms were approved. The canvas bath was constantly used. One ship fitted a steam hose, and in so doing was able to begin swimming instruction in the bath in May and taught far more

boys. Cooks, bakers, stewards, and the barber had a daily bath by order. Such ratings as these got a short spell of physical drill daily. Dentists (contract) were coming in; the province Schleswig subscribed a fund which enabled a dentist to be hired to deal with the teeth of men in the *Schleswig*. This was very practical charity, and the principle might well be followed in this country. Suppose the city of Dublin annually sent money to the captain of H.M.S. *Dublin* to buy papers for the men and to help, for example, a man who had lost teeth, by an accident not attributable to the service, to get a new set. At Tsingtau crews of ships under refit were lodged in barracks ashore, an improvement often asked for on this side of the North Sea, and carried out at Bombay and Trincomalee. Latrine paper was served out for the use of diarrhœa cases which were, or might be, infectious, and a bucket of cresol solution was put near their closet for hand disinfection. *Scharnhorst* in hot weather gave her men two baths a day, and her stokers at Tsingtau got eight days' special leave by watches in a barracks up country for the good of their health. Bugs and cockroaches were being energetically pursued.

1913–14: Newspaper reading and smoking in the water closets made it necessary that the seats should be altered and made less comfortable. Some of the men paid to have their teeth put right and bought tooth powder from the canteen. A formalin disinfector was fitted in all flagships. Hand washing after work and before meals and cleaning of teeth were officially pressed on the men. Atropin was found useful for sea-sickness. Men's blankets were enclosed in washable covers to keep them clean. Amongst the drinks provided to win the men away from beer *Loreley* issued yoghourt, Bulgarian bacillus milk. This should have prevented indigestion; it was introduced by the medical officer—it is a pity the result is not stated.

RAT DESTRUCTION AND PLAGUE IN INDIA.

THE epidemics of plague in India, for all practical purposes, may be said to be entirely dependent on epizoötic plague in rats. Measures for the eradication of this malady have therefore to be directed mainly to reduction of the rat population, either indirectly, by limiting their shelter and food and by fostering their natural enemies, or directly, by destruction of these rodents by means of traps, poison-baits, and the like. To produce the greatest results the methods of rat destruction should be applied in the plague "off-season," that is, in the interval between the decline of one outbreak and the commencement of another. The measures are particularly urgent in villages and in quarters of towns where there is reason to believe that epizoötic plague will persist during the off-season. For some years Major J. C. G. Kunhardt, I.M.S., and Assistant-Surgeon G. D. Chitre have been engaged in carrying out work of an experimental kind on the rat question in Poona and adjacent districts. Of late they have devoted attention particularly to effecting improvements in the methods employed for destroying rats and changes in the composition of poison-baits and their relative values. The results of these experiments, so far as they have gone, have been recently published in the *Indian Journal of Medical Research* (Vol. VIII., No. 3). It was demonstrated by these experts that rat-traps varied in efficiency, but by a judicious selection of material for baiting the traps their utility could be further increased. Experiments were carried out with various poisonous substances, including hydrocyanic acid gas. As regards the latter, it is pointed out that its use for fumigation purposes will not be found satisfactory until some method is discovered for rendering Indian houses more air-tight while they are being fumigated. Much time was occupied in experimenting with the various poisons, the material used for making up the baits, and with the different patent preparations advertised as efficient rat-killers, including "Rough on Rats," the "Common Sense Rat-Exterminator," the "Punjab Rat-Exterminator" (a phosphorus compound), and others. But after prolonged experiments it was demonstrated that the best rat-killer was barium carbonate, three grains of which will kill a rat of any size. In comparison with the Punjab rat-exterminator it was found to be twice as poisonous, while it killed in a shorter time. The cost of the minimum lethal dose of the Punjab rat-exterminator is at least 60 times greater than the cost of the minimum lethal dose of barium carbonate. When this poison cannot be obtained the most suitable substitute is arsenious acid, if not otherwise contra-indicated. Like barium carbonate it appears to be tasteless. It is cheap and easily obtainable in India, but it has its drawbacks, and its use is not without certain dangers. Its lethal dose for an average-sized Poona *Mus rattus* is half a grain, but probably one grain would kill a rat of any size. The rat, being a sagacious as well as a suspicious animal, some ingenuity and care are needed in the preparation and laying of the poison-baits. By experiment the best material for making up poison-baits was found to be bajri (spiked millet) dough, this vehicle being six times more popular with rats than wheat, which formerly was commonly used for the purpose. The employment of sugar as an additional attraction to the bait, as was usually recommended, was found not only to be a useless extravagance but actually to diminish the amount of the bait consumed by about 50 per cent. Unfortunately these baits, made of three grains of barium carbonate and 12 grains of bajri dough, deteriorate rapidly and are practically useless on the second day. A dry mixture of barium carbonate and bajri flour, though less popular with the rats than the wet dough, does not deteriorate so rapidly. A rat when starving will probably eat anything from which nutriment may be extracted. In "go-downs," food stores, and such places rats are generally abundant and far from being underfed; to prevent the spread of plague by them it is urgent that these rats should be destroyed, and in such circumstances their powers of discrimination as to poison-baits require very careful consideration. It is believed that the use of the poison-bait described above will prove to be of higher efficiency in rat destruction than those formerly employed; and it is suggested that the real rate of efficiency in favour of the new bait may well be even greater in nature than it has been shown to be in the laboratory experiments. Finally, Major Kunhardt and Assistant-Surgeon Chitre express the opinion that the failure to eradicate plague in villages and towns at previous attempts was attributable to a large extent to the inadequacy of the measures employed for the destruction of rats.

THE PERIL OF THE AIR.

THE airship disaster last week at Kingston-on-Hull has saddened two continents, and has drawn together the whole populations of America and England in a common bond of sympathy for the relatives of the 46 brave and distinguished men of the R 38 who perished by burning or drowning. Pioneers in a new enterprise are not prone to count their risk too exactly, or to set a price upon their lives, provided that the task is worthy of the risk. In this case no one except a few doctrinaires doubts the worthiness of the human aim to gain the mastery of the air by ships of light weight. Fragile and expensive they must needs be, but the onlooker is fain to ask whether the gas that supports the balloon need be capable of burning and exploding at all, and whether the oil that drives the machines need flash into flame at the slightest spark. Light petroleum has long been eliminated from ordinary household economy on account of its danger, and the heavier oils are already in use in certain forms of internal combustion engine. Of the group of inert gases discovered by Rayleigh and Ramsay, helium has an atomic weight of only 4, and the gas being monatomic is barely twice as heavy as hydrogen, and three times

as light as ordinary coal gas. Helium is very widely distributed in nature, it is present in minute proportion in the atmosphere, and occurs to the extent of 1·5 per cent. or more in the natural gas of Kansas. It is vastly safe as a buoyant agent, for it is not only non-inflammable, but it has hitherto resisted every effort to make it combine with other elements. The terrible disaster will not sound the knell of the airship or prevent men from risking their lives in its further development, but it should and must turn the minds of our rulers to insist on every avenue of safety being explored, even if helium has to be fetched from America and new engines designed to consume heavier fuel.

SYPHILIS IN THE NEGRO.

Dr. Ernest L. Zimmermann,[1] of Baltimore, has undertaken a comparative study of syphilis in whites and negroes for the purpose of emphasising inherited racial differences in response to syphilitic infection. The paper is based on the study of 1843 cases in the Johns Hopkins Dispensary, a charitable clinic in which approximately 60 per cent. coloured and 40 per cent. white patients are treated. The race and sex distribution of the cases was as follows: 596 white males, 521 coloured males, 297 white females, and 429 coloured females. It was found that in negroes a much greater number of infections occur before the twentieth year than in whites. Over 50 per cent. of the female patients become infected before their twenty-first year, a fact explained by their early indulgence in promiscuous sexual intercourse, the greater frequency of syphilis in the negro race, and the sexual indulgence of the negro male in spite of the presence of primary or secondary lesions. No differences were noted in the character of the chancre in the two races, the more pronounced induration described by Morrison in the negro not being observed. Dr. Zimmermann's experience confirms that of other writers as to the rarity of extragenital chancres in the negro, only 5 out of 27 such chancres in this series being found in coloured patients. Secondary syphilis in the negro was characterised by marked polyadenitis, frequent and severe osteoarthritic symptoms, by the frequency of iritis, and by the high incidence of follicular and pustular syphilides. Though secondary lesions of the mouth and pharynx exclusive of diffuse erythema were commoner among the white patients, moist papules and condylomata were much commoner in the coloured race, especially in the female. The annular papular syphilide first described by Atkinson in 1882 under the name of syphiloderma papulatum circinatum was unusually frequent in the negro. Tertiary syphilis in the black race was characterised by the predominance of osseous lesions which were twice as frequent as in white patients in whom neurosyphilis was much commoner, and constituted about half of the late manifestations. Cardio-vascular syphilis, as had also been found by Osler and Janeway at the Johns Hopkins Hospital, was relatively more frequent in Dr. Zimmermann's negro patients with an incidence of two to one in coloured and white males respectively. Cerebro-spinal syphilis, including both the meningitic and endarteritic forms, was approximately of equal frequency in both races. Cerebral endarteritis was particularly frequent in black patients, being observed in 20 negroes and in only 9 whites. Tabes was diagnosed in 94 white and in 14 coloured patients, and general paresis in 24 white and only 4 coloured patients. Dr. Zimmermann concludes that there are inherited biological differences between white and negro patients as regards syphilitic infection. The negro develops intense reactions in the cutaneous and osseous structures, and is relatively free from tabes and paresis. In white patients absence of, or only slight development of, skin manifestations is more frequent than in the negro, but there is a greater tendency to tabes and general paresis.

[1] Archives of Dermatology and Syphilology, July, 1921.

THE MAUDSLEY HOSPITAL.

THE third course of instruction for the diploma in psychological medicine opens at the Maudsley Hospital on Monday, Oct. 3rd. On that day, at 2.30 P.M., Sir Frederick Mott gives the first of a series of six lectures on the Pathology of Mental Diseases, and at 5 P.M. Dr. Bernard Hart delivers the first of eight lectures on the Psychoneuroses. On Wednesday, Oct. 5th, at 2.30 P.M., Dr. F. C. Shrubsall lectures on the Practical Aspect of Mental Deficiency, and at 4.30 P.M., Dr. W. C. Sullivan commences a series on Crime and Insanity. On Thursday, Oct. 6th, at 2.30 P.M., Dr. C. H. Bond takes up the Differential Diagnosis and Treatment of Mental Disorders, and at 4.30 P.M. Dr. E. Mapother lectures on the Symptoms of Mental Disease. Six clinical demonstrations will be given on Tuesdays, 2.30 P.M., at the Maida Vale Hospital for Paralysis and Epilepsy, by Dr. F. Golla, commencing Oct. 4th, Sir F. Mott continuing the series. It should hardly be necessary to call attention to the importance of the Maudsley Hospital as a school of psychological medicine. In line as it is with the forward movement in mental medicine on its preventive side, this institution cannot be allowed to fall a victim to the very natural spirit of economy at present prevailing at the London County Council. Medical men in London will lose no opportunity of making their opinion effectively known in this regard.

EXPERIMENTS ON LIVING ANIMALS.[1]

UNDER this title a return has been issued over the signatures of Sir George Thane for England and Scotland, and of Dr. M. C. McKenna for Ireland. Full details are tabulated of the places registered for vivisection, of the licensees with their qualifications, and of the number and nature of the experiments performed. Sir George Thane in his report makes it clear that the utmost precautions must be taken by investigators to avoid pain and sepsis, not only in the interests of the animals, but in order to ensure successful results. It is unnecessary here to set out the limitations imposed on licensees working under the various certificates issued, as medical men are well aware of the strict supervision of all biological research. Most workers will have received unexpected visits from inspectors, and the tribute paid to licensees for their attention, not only to the actual requirements of the Act but to the suitable lodging and general well-being of the animals, will be received with satisfaction. Seven technical irregularities only are noted, six due to inadvertence or misapprehension, and in the seventh case only, where experiments needing Certificate B were performed by a licensee holding only Certificate A, was the outstanding application for the required certificate refused. Distortion of the true facts relating to experimental medicine can best be refuted by reference to official statements, and an accessible copy of the current report might well be on the medical man's bookshelf.

Sir Walter Fletcher will preside over the Section of Physiology of the British Association to be held at Edinburgh next week and will speak on the part played by physiology in the war.

[1] H.M. Stationery Office. Price 6*d*.

RADCLIFFE INFIRMARY, OXFORD.—The successful post-graduate course held in October last year is being repeated this year from Oct. 3rd–8th. The subjects for discussion include the Cause of Diseases of Joints (Sir A. Garrod), Modern Views of Heart Disease (Dr. W. Collier), Some Cases in the Later Stages of Syphilis (Dr. E. Mallam), while the surgeons will operate at stated times, and demonstrations will be given in the wards and special departments. Dinner in Queen's College Hall on Saturday evening completes the week. Further information from Dr. Hugh Whitelocke, Secretary to the Committee, 6, Banbury-road, Oxford.

HEALTH OF LONDON SCHOOL CHILDREN:

REPORT FOR 1920 OF THE SCHOOL MEDICAL OFFICER, L.C.C.

VOLUME III. of the annual report of the London County Council, which has just appeared, may be obtained from P. S. King and Son, Ltd. (No. 2104. Price 2*s*. 6*d*.). It contains in two parts the public health reports of Dr. W. H. Hamer, County M.O.H. and S.M.O., the second and longer part being headed "Education." It is this chapter which is here briefly summarised. The report, it may be remarked, has high literary merit and contains dissertations and digressions of a technical nature which add greatly to its interest.

General Progress.

Dr. Hamer opens with the statement that the results obtained during 1920, so far as school medical work is concerned, were favourable beyond all expectation. The figure of 76·9 per cent. of children found satisfactorily dealt with up to the time of the second re-inspection is the highest on record since the Council undertook to provide treatment for ailing children. In respect of physical conditions the great gains claimed during the year are those accruing from (*a*) medical oversight of continuation school young persons and of children coming within the scope of the new by-laws as to employment; (*b*) extended medical treatment scheme affecting elementary school children, secondary school children, and any young persons unable to obtain treatment save under the Council's scheme; and (*c*) materially improved methods of cleansing now being put into operation throughout London.

Tonsils and Adenoids.

An interesting event was the opening of a centre in Woolwich at which children operated upon for enlarged tonsils and adenoids are kept for two days subsequent to operation. After discharge from this special centre each child returns to the local centre for breathing exercises under the supervision of his own surgeon until finally discharged as cured. This is a great advance, as the results of these operations in out-patient departments without after-care have been unsatisfactory. It would be interesting to learn what interval usually elapses between the operation and the final discharge as cured, and whether the patients discharged as cured are able to breathe comfortably through their noses both when awake and asleep.

Nutrition, Cleanliness, Teeth.

Medical inspection during 1920 revealed a slight improvement in clothing, a continuation of the deterioration in nutrition which was noted in 1919 (following the war years during which there was a notable improvement), and a continual steady improvement in cleanliness. There has been, Dr. Hamer writes, a 30 per cent. improvement in seven years in verminous conditions, and this improvement has been accelerated during the last three years, during which a great forward campaign against infestation by vermin has been going on since the Council made addition for the purpose to the personnel of the school nursing staff.

Slight ground is said to have been gained as regards dental conditions. The report recognises the immense problem that remains to be solved. Forty-six dental centres have been provided and are working at full pressure, and although the numbers of children at the older ages with serious dental caries have been halved since provision for treatment began to be made, yet 40 per cent. of the children leaving school still have obvious dental caries. "Now," Dr. Hamer writes, "dental decay is held by all to be a preventable disease, and it is clear that in order to cope with this great mass of trouble all the aid that can be given by education and the practice of hygiene must be pressed into the service. Not by treatment of the worst cases, but by prevention at the outset, will success finally be achieved." No practical suggestion is offered in regard to prevention, and the report possibly does not mean us to infer that there is general agreement as to how dental decay is to be prevented.

Open-Air Education.

A hopeful account is given of the treatment of suppurating ears by ionisation. Satisfactory results are reported from the classes for stammering children. The difficulties encountered in following up children suffering from defects are set out at some length. Some interesting notes by Dr. C. T. Thomas on the medical examination of school children employed in entertainments are given. Definite progress has been made during the year in the provision for open-air education. During 1920, 2700 boys were admitted to the King's Canadian Camp School, Bushy Park (opened in August, 1919), with satisfactory results. Wanstead House Camp School, accommodating 64 girls, was opened in August. Of the 2000 places in open-air day schools estimated to be required in London for non-tuberculous children, 410 places have been provided and 600 are proposed; of the 2000 places needed for tuberculous children 290 have been provided and 100 are proposed.

We agree with Dr. Hamer that these open-air schools should not be closed for the summer holidays, "just at the time when the maximum benefit is being received by the children." In addition to the open-air schools, much good work has been done for ailing children by the establishment of open-air classes in connexion with elementary schools.

Physical Culture.

A noteworthy event of the year has been the establishment of a College of Physical Education for London teachers. Facilities for attendance at the College have been offered to teachers in the service and accepted by large numbers, so that ere long the effect of the College will show itself in improved physical training at the Council's schools. Special classes in physical exercises for children suffering from incipient deformities have given good results during the last few years, and it is hoped to increase the number of such daily classes to 100 during the coming year. An experiment is recorded at Vauxhall Street School, where the head teacher has endeavoured to found all the educational activities of the school upon a basis of physical training. The effects were shown by increased attendance and by the physical, moral, and mental improvement of the scholars.

There has been a considerable increase in the provision of meals as compared with the previous year. Thus in the last 12 school weeks of 1920, 191,514 elementary school children were fed, as compared with 113,747 during the corresponding period of 1919.

Dr. A. G. Wells deals with the difficulty of "diphtheria carriers," and is inclined to favour the view that the rules as to their exclusion from school may have to be relaxed. Other matters of interest dealt with are "School Holidays in Relation to the Spread of Scarlet Fever and Diphtheria," "Scarlet Fever and Diphtheria in Relation to Flea Prevalence," and "Diagnosis of Mental Defect."

The report is a record of useful work and progress during a year in which the general death-rate and infant mortality of London were lower than ever before.

WATER-SUPPLY FOR CARAVANNERS.—A Cheshire farmer was summoned at Birkenhead last week for failing to provide a sufficient supply of wholesome water to a caravanner who was renting a field from him. The obligation rests on a by-law made by the Ministry of Health under the Housing of the Working Classes Act, 1885. As it was the first case of the kind the farmer was let off with the payment of costs.

TUBERCULOSIS.

The German Tuberculosis Congress at Bad Elster.

THE reports to hand of the German Tuberculosis Congress, held on May 19th to 21st inclusive at Elster, show that it was well attended, German and foreign visitors numbering about 700. The chief fault found with this congress was the omnipresence of the multiple tautologist. For lack of adequate rationing of these congress pests several delegates with messages to give were crowded out and received no hearing. Congress logorrhœa is a cosmopolitan evil which bids fair to smother medical meetings and to keep away speakers with something new and interesting to say. This state of affairs is the more deplorable as there are certain remedies open to the organisers of congresses animated by the ambition to suppress the congress bore.

In his opening address Kirchner, of Berlin, discussed the influence of the war on tuberculosis, showing how it affected different areas and different age-groups. In an interesting lecture on the part played by domestic animals in the spread of tuberculosis, Prof. Lydia Rabinowitsch referred to studies she had carried out on dogs and cats. Of 19 strains of tubercle bacilli cultivated from dogs, as many as 16 had been found to belong to the human type; only one belonged to the bovine type, and the two remaining strains were of a transitional type. Of five strains of tubercle bacilli cultivated from cats, three belonged to the human and two to the bovine type. Prof. Rabinowitsch was inclined to regard domestic animals as a fairly important source of infection of tuberculosis to man. Papers by Wassermann and Neufeld on immunity in tuberculosis were in a sense discouraging; neither believed in the existence of remedies which attacked the tubercle bacilli in the body, the only remedies which were effective being such as acted on the resistance of the tissues. Friedmann's turtle vaccine did not figure on the programme of the congress, but Klopstock interjected some comments on this remedy, which he had found to be useless in advanced cases and so uncertain in its action in early cases that the results achieved did not bear out the puffs of its promoters. Wassermann referred to it as not only useless but dangerous. Another remedy discussed in unflattering terms was the Deycke-Much partial antigen treatment. Neufeld declared that no experimental evidence had yet been produced in favour of the claim that Much's preparations were superior to other tuberculins, and his "partial antigen laws" were, in Neufeld's opinion, quite "up in the air" and bereft of any scientific foundation. Prof. Uhlenhuth's advice was to the effect that research in chemotherapy should be pursued, as he believed in the possibilities of destroying the tubercle bacillus in vivo by chemical agents. On the other hand, the most authoritative speakers adopted a sceptical attitude towards the possibilities of destroying the tubercle bacillus in the body by immunobiological methods. Perhaps the most useful function of this congress was the opportunity it gave leaders of the medical profession in Germany to chart for the benefit of their colleagues the blind alleys of the problems of tuberculosis.

Annual Report of the Trudeau Sanatorium.

The thirty-sixth annual report for the year ending Oct. 31st, 1920, is, like its predecessors, stimulating and hopeful without being heady. More and better work has been done than heretofore, an endeavour has been made to employ more exact methods in treatment and diagnosis, and every advance in clinical or laboratory work has been weighed carefully in its potential relations to the patient. By keeping up to date with the study of tuberculosis research all over the world the medical officers of the sanatorium are able to correlate their own investigations with research elsewhere, and by their system of coöperative and collective study they have rendered the diagnosis of tuberculosis untenable in an increasing number of cases. "The diagnosis of pulmonary tuberculosis, curiously enough, grows more instead of less difficult as time goes on." At the Trudeau laboratory, S. A. Petroff has nearly completed his researches into the distinctive features of different groups of the human tubercle bacillus, and he is also engaged in studies in iso-agglutination of the blood and the clinical value of the complement-fixation test. The value of acriflavine has been studied experimentally, and while found to prevent growth in the test-tube, it apparently hastened the death of the animals. Extensive studies have also been carried out on the value of vitamins in the tuberculosis of rats, and experiments have shown that the bovine tubercle bacillus grows best with vitamin B, the human type with vitamin A. Healing of tuberculosis being in part due to the deposit of lime salts about the tubercles, the laws governing such a deposit have been studied, many patients have been treated with an excess of lime salts in the form of calcium lactate, and the results obtained are shortly to be published. Equipment has recently been provided for a study of the basal metabolism in tuberculosis and for complete chemical examinations of the blood. Since the recent introduction of diagnosis of intestinal tuberculosis by the X rays, more than 700 cases have thus been investigated, and 5 or 6 per cent., some without clinical evidence of intestinal tuberculosis, have been found to suffer from this complication. "Our methods were studied to see if we could dispense with the X ray work in the diagnosis of this condition, but it was found impossible to make a definite diagnosis without it." Since the Trudeau Sanatorium was opened in 1884, 5586 patients have been admitted, and for the past 18 years an attempt has been made to communicate with each discharged patient each year. In 1920 only 5·5 per cent. of all the patients ever admitted to the sanatorium remained unaccounted for, and an analysis of 4975 patients, treated up to Oct. 31st, 1919, showed that 2240 were alive and well, 578 were alive but ill, 1894 were dead, and 263 could not be traced. The moral of this report is that a sanatorium which is inspired by restlessly dynamic forces can not only treat tuberculosis successfully, but may also advance our knowledge of the genesis of this disease.

Late Results of Pneumothorax Treatment.

Two of the most common and plausible objections to pneumothorax treatment are that its benefits are only palliative and evanescent, and that while it may be recommended to the "idle rich," it is unsuited to the working-class patient whose survival depends on his ability to support himself. In a recent paper Dr. S. M. Saxtorph [1] of the Danish Nationalforenings Sanatorium at Nakkebøllefjord has attempted to meet these two objections by showing that, even several years after discharge, a considerable proportion of working-class patients treated by artificial pneumothorax may still be fit for work. This treatment has been adopted at Dr. Saxtorph's sanatorium for over ten years, and his paper deals with 200 patients whose disease qualified them for pneumothorax treatment. They were classified according as (1) a pneumothorax could not be induced, 58 cases; (2) only a partial pneumothorax could be induced, 34 cases; and (3) a complete pneumothorax could be induced, 108 cases. Two years or more after the discharge of these patients it was found that of the 58 in the first class 47 were dead, 6 were alive but unwell, and only 5 were fit for work. Of the 34 patients in the second class only 3 survived, and of these only 2 were fit for work. But of the 108 patients in the third class, in which the pneumothorax was comparatively large and unlimited by other than slight apical adhesions, 34 were alive and for the most part fit for work two to six years after discharge. It appears from these figures that a working-class patient in the third stage of pulmonary

[1] Ugeskrift for Laeger, June 2nd, 1921.

tuberculosis may have a 33 per cent. chance of recovery, maintained for several years, if his artificial pneumothorax is big enough. But, as Dr. Saxtorph's figures suggest, a small, partial pneumothorax may even do more harm than good by keeping diseased foci in the lungs in a state of tension.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Treatment of Encephalitis with Pregl's Solution of Iodine.

AT a recent meeting of the Vienna Medical Society Dr. Dattner reported on the results obtained by the administration of the new iodine combination worked out by Professor Pregl, of Graz. This solution was said to give off pure iodine in tissues pathologically changed. The results obtained in other places had been so satisfactory that the Vienna Clinic for Neurology was prompted to test the substance on cases of encephalitis lethargica; the cases were all of the acute type, and the effect was observed very shortly after the injection. The treatment consists of intravenous injection of large doses—100 to 300 c.cm. —up to a total of 1500 c.cm. of the liquid. Some of the cases had been treated without effect with urotropin and methylene-blue. The changes produced by the injections were: disappearance of the drowsy condition, of the Kernig's symptom, and gradual restitution of normal health. In chronic cases the disease (e.g., of the trophic centres) was of too long standing for much benefit to be obtained. In one case the patient was up and about again after 24 hours. The disadvantages of the injection are sometimes slight pain and urticaria, and sometimes thrombosis of the veins. It is advisable to use a large needle and syringe, as the liquid is rather viscous. The investigations suggest that the solution is, if employed early, a useful remedy against encephalitis. At the same meeting Dr. Hauer was able to report on the value of the same solution in dental work, for which it was originally intended. He used it in alveolar pyorrhœa, in implantations and re-implantations of teeth, and in operations on the maxillary antrum, with regular success as regards rapidity of healing.

The Results of Famine Relief amongst Children.

The chief officer of the Vienna Board of Health, Dr. Böhn, reported recently to the Medical Society on the results of the public feeding of children in this city. Of 195,000 children attending the public schools, no less than 171,000 were examined. Only 15 per cent. were found in January, 1920, to be normal in physical development, 40 per cent. showed more or less marked deficiency in weight and body measurement, whilst 45 per cent. were classified as severely underfed and lacking in development of bones. By the work of an excellent organisation, which ensured that each child really got the meal intended for it and really partook of it, the general condition of the prospective candidates for tuberculosis was so altered that they could overcome the latent tuberculosis from which the majority of them were presumably already suffering. The enterprise of English and American philanthropists has saved thousands of children in Central Europe from starvation. A few figures will help to show the actual situation: In 1912, the number of deaths in Vienna was 32,141; in 1918 it rose to 51,497. In 1919 it fell to 40,932, and in 1920 there was a further drop to 34,197. The drop is chiefly due to the saving of life in the age-periods from 5 to 15 years. Deaths from tuberculosis numbered 6358 in 1912, 9809 in 1918, and 7132 in 1920. The rapid recovery in general health, evidenced by the falling mortality figures, is ascribed mainly to the improvement in their nourishment aided by the temporary expatriation of so many children under the care of English, American, and Dutch committees. In 1920 42,000 children at a time were boarded out in Holland, Switzerland, Italy, and England. Institutes for the care of rachitic and tuberculous children were substantially aided by grants and gifts from abroad. At the height of the relief activity 29 central kitchens were engaged in the preparation of the 150,000 portions of meals required daily. Each portion contained the food value of 500 nem for infants, 1000 nem for school children, and 1500 nem for juveniles up to 16 years. The places of distribution numbered 534 in Vienna; throughout Austria 400,000 portions were distributed daily. The children were subject to repeated examinations, the last one taken in the winter 1920–21 comprising all the children fed by the famine fund. The increase in weight and length was on an average 5 per cent., but in many cases was as much as 12 per cent. The number of children to be classified as underfed has dropped to 22 per cent., whilst the number of well-fed has gone up to 35 per cent. of the total; the remainder are described as approximately normal—in short, an excellent result. Similar investigation of juveniles (14 to 16 years) is now going on, and the results will be published.

Unveiling of Tablet to Politzer.

On the anniversary of Prof. Politzer's death—the famous otologist was indirectly a victim of the deplorable conditions prevailing last year in our public life—a commemorative tablet was unveiled, in the presence of many of his friends and former pupils, in the lecture-room of the Vienna Otologic Clinic. Representatives of many German and American learned societies testified to the esteem which the deceased had commanded all over the world. Docent Dr. Ruttin formally accepted the tablet on behalf of the clinic.

Appointment of Prof. Kermauner.

With the appointment of Prof. Kermauner to direct the second gynæcological clinic (Prof. Peham is the head of the first clinic) an unsatisfactory state of affairs has been terminated. For more than a year students of gynæcology and obstetrics have had no instruction from a fully recognised first-class teacher; during Prof. Wertheim's illness both clinics lacked responsible guidance.

Drought and the Water-supply.

For some weeks the city of Vienna has enjoyed not only the benefits of a tropical heat but also an abundant supply of excellent water. The result is that the public health reports show a marked drop in the incidence of disease and in mortality. Catarrhal conditions of the respiratory organs are practically unknown at present, deaths from tuberculosis are comparatively few, and even the gastro-enteric conditions so often associated with summer heat are not as bad as in former years. It seems that the continuous sunshine has destroyed or weakened the toxicity of the microbic infection, whilst the wholesome water-supply increases the resistance of the individual. The water is obtained from the Alps, at a distance of some 150 miles; for each person in Vienna 100 litres a day is provided. Vienna is now perhaps the best supplied large city in the world as regards the purity and temperature of its water-supply. The only drawback of the heat wave is the fact that a large proportion of the milk arrives in a sour condition. Lately over 40 per cent. of the milk-supply was sour, and condensed milk had to be widely distributed amongst weanlings.

August 12th.

IN response to an appeal by the chairman of the board of the Bradford Royal Infirmary, a donation of £1000 has been sent by Mr. W. H. Shaw, of Bradford, for the purchase of an X ray plant for the treatment of internal malignant disease.

ROUMANIA.

(FROM OUR OWN CORRESPONDENT.)

Anthrax among Animals.

OWING to the uncommon drought this year, and to the consequent insufficient feeding of animals, the number of cases of anthrax is much greater than in corresponding periods of other years. In some parts of the country there is absolutely no grass or water. If the animals do not die of thirst their resistance is so reduced that they readily develop diseases, of which the most prevalent is anthrax. According to Roumanian sanitary law animals suffering from anthrax must not be treated at all, but immediately slaughtered and buried: but the peasants, in order to decrease their losses, take off the hide of the animals, for which they get almost as much as for the animal itself. Many recent cases of anthrax have resulted from this practice. Severe penalties have now been instituted for the infringement of these laws. In one village, near Satu Mare, five animals suffering from anthrax were buried, and the gipsies near the village exhumed the beasts, and ate meat cut from them. Naturally all were taken ill, three of them died, and the rest are being treated in the county hospital.

The late Prof. Genersich.

Dr. Gustav Genersich, professor of pediatrics at the University of Klausenburg (now Cluj), died on July 23rd in his fifty-sixth year. The chair of pediatrics at Cluj was his creation; his name and works are familiar wherever the diseases of children are studied. Prof. Genersich came of a medical family; his great-grandfather was a professor at the University of Vienna, his grandfather a very celebrated practitioner in Hungary, and his father was for more than a generation professor of pathology at the University of Budapest. He himself studied pediatrics at Vienna, Paris, and London. Among his more notable works were the following: "Hereditary Dilation and Hypertrophy of the Colon in Infants"; "Bacteriological Researches on So-called Septic Diphtheritis"; "Remarks on the Practice of Intubation"; "The Influence of the Cradle upon the Development of the Skull"; "On Infantilism"; "On the Spiritual Life of Small Children"; "The Relation of Tuberculosis to School": and "Official Researches on the Fate of Illegitimate Children." He founded a school for mothers and created an association for the protection of children. During and after the war he turned all his activity towards the care of war orphans, and the considerable decrease of infant mortality in Transylvania is largely attributable to his efforts.

The Unimportance of a Negative Wassermann Reaction.

Dr. Ferencz Veress, professor of venerology at the University of Cluj, says in an article on the above subject that most unfortunate consequences attend the practice of attaching importance to a negative serum reaction. It is still worse if a patient goes directly to a laboratory and not to a specialist. Basing his statement on details of several thousands of cases, he asserts that a positive reaction is the sign of active syphilis, necessitating energetic treatment, but he is emphatic in warning against the drastic treatment of old latent cases of lues, where reaction should be gradually induced by means of mild treatment with mercury or iodine. A negative W.R. alone means nothing at all—the disease may be either non-existent or latent. The reaction can be negative in all stages of syphilis, whether mild or severe. In the estimation of cures clinical symptoms are to be relied upon, but not the negative W.R. It may be necessary to give a course of treatment even when the reaction is negative.

Enuresis and Organotherapy.

Dr. Konradi, specialist in diseases of children, has studied the treatment of enuresis for more than two decades. In 1910 he experimented with organotherapy, employing thyroidin, recommended by Williams, and the testicular extract recommended by Serralach, but was not satisfied with the results, and continued experiments to obtain a reliable cure. He came to the conclusion that the real cause of the disease was insufficiency of the blood-forming organs and endocrine glands, and introduced the application of thymus extract as advised by Ruhra in Baltimore and Firth in London. His results of combined treatment with thyroidin, testicular and thymus extracts leave little to be desired; children suffering from enuresis are given one tablet every day of each, thyroidin, thymus, and testiculin, with rapid and excellent results. Konradi maintains that this effect is a specific one. He had had no case where the three extracts combined did not give good results. In girls, instead of testiculin, ovarial extract is administered. He quotes a case in which a man wanted to divorce his wife on account of her enuresis; by means of his combined treatment Konradi cured the woman and removed all grounds for divorce.

Bucharest, August 18th.

THE HORSLEY MEMORIAL.

THE organisation formed in November, 1920, to secure in permanent form the recognition of the life and work of Sir Victor Horsley has now published a further list of subscriptions, promised and received, as follows:—

	£	s.	d.
Donald Armour, C.M.G., Dr. Ernest Clarke, Colonel Littlewood, C.M.G., W. Rushton Parker, Dr. C. E. Reynolds (Los Angeles), G. E. Twynam .. each	5	5	0
Sir N. M. A. Abbot-Anderson, M.V.O., C. S. Handley each	3	3	0
Dr. C. Bolton, Herbert H. Brown, Captain L. F. Hine, Dr. A. Jones, Edward F. Maynard, Dr. A. McCormick (Sydney), Dr. J. J. A. Neil .. each	2	2	0
Dr. J. Blamey, Dr. C. E. Evans, Dr. J. Lockhart Gibson (Brisbane), Dr. E. G. Goffe, F. P. Mackey, Dr. Nabarro, Prof. J. T. Wilson .. .. each	1	1	0
Dr. L. de Zilwa (Ceylon)	1	0	0
J. W. Papillon	0	7	0
National Hospital (Queen-square)	2	6	5

The total acknowledged in previous lists is £818; these lists appeared in THE LANCET, 1921, Jan. 1st, p. 46, Feb. 19th, p. 407, and May 7th, p. 988.

Further subscriptions, and those promised and still unpaid, will be gratefully received by either of the hon. treasurers, Sir Frederick Mott, K.B.E., Maudsley Neurological Hospital, Denmark-hill, S.E. 5, and Dr. H. H. Tooth, C.B., C.M.G., 34, Harley-street, W. 1, or the hon. secretaries, Sir W. Arbuthnot Lane, Bart., C.B., 21, Cavendish-square, W. 1, and Mr. Edward J. Domville, O.B.E., Symondsbury, Bridport.

James Watson Allan, M.B., F.R.F.P.S. Glasg., lately physician superintendent of the City of Glasgow Sanatorium at Bellefield, Lanark, was recently entertained by the staff of the Public Health Department, who presented him with a silver rose-bowl. Dr. A. K. Chalmers spoke warmly of Dr. Allan's work in building up Glasgow's first great fever hospital.

DEVONSHIRE HOSPITAL AND BUXTON BATH CHARITY.—At the annual meeting an appeal was made for increased financial support, it being pointed out that the total income for the past year was £22,985, or £775 9s. 9d. less than the previous year. Dr. C. W. Buckley, hon. physician to the hospital, called attention to the valuable research work done by the institution in regard to rheumatism. No other hospital in the world anywhere near the size of Devonshire Hospital, he said, was devoted to the work of rheumatic disease; there any method at all worth a trial was tried and tried carefully. The best method of all was the proper use of the Buxton mineral waters, but the literature on the treatment of rheumatism made little mention of the use of the Buxton waters. The work of such institutions as the Devonshire Hospital ought to be better known, and the results of the research work carried out should be widely disseminated among medical men.

Public Health Services.

Size of Panel Lists.

THE prevalent notion that the average number of insured persons on a panel practitioner's list runs into thousands is dispelled by the figures given in the Health Minister's report. The regulations now, of course, impose a limit of 3000 as the absolute maximum for a doctor working single-handed. In one-third of the English areas the maximum is fixed at 2500 or under. On Jan. 1st, 1921, about 34 per cent. of insurance practitioners had less than 600 names on their lists, another 30 per cent. had between 600 and 1200, 22 per cent. had between 1200 and 2000, and only the remaining 14 per cent. (numbering some 300 doctors) had upwards of 2000 names. In the last group in many cases an assistant is employed.

Consultant Service in Wales.

Generally speaking rural areas are badly served with consultant advice, and the memorandum prepared by Dr. Ewen J. Maclean on the position of Wales in this respect is of interest at this juncture. The note appears as an appendix to the second report of the Welsh Consultative Council, to some aspects of which we have already called attention. In a mixed urban and industrial area, Dr. Maclean estimates that there may be 2000 inhabitants to one general practitioner, and 45,000 inhabitants to one consultant, using the term to include specialists as well as physicians and general surgeons in practice as such. He traces the natural history of the consultant, recording his own opinion that the competitive element in his career is of advantage alike to himself and to his patients. The number of consultants is necessarily proportionate to the number of status-giving hospitals, general and special, and the number of hospitals is grievously deficient in Wales, apart from Cardiff and Swansea. Facts brought to public notice by the School Medical Service, and by the Naval and Army Services during the war, have, in Dr. Maclean's opinion, produced a popular demand for extended preventive and curative treatment and therewith for more consultants. Under present circumstances therefore the customary long waiting period and its associated struggle for existence might with advantage be curtailed or eliminated. The cost of adequate whole-time salaries for all consultants is regarded as prohibitive, even if desirable, and remuneration is suggested on a part-time basis, with extra fees for special visits and certain operations. The memorandum has a close bearing on the National Health Institute and the four Central Institutes—namely, at Bangor, Wrexham, Swansea, and Newport—suggested as part of a complete scheme of medical and allied services for the Principality.

Canal Boat Hygiene.

The second annual report of the Ministry of Health has little fault to find with the habits of canal boat dwellers, a class not generally associated with any particular regard for hygiene. On the occasion of more than 19,000 inspections by Mr. Owen J. Llewellyn during 1920, boats were found without infringement of the Canal Boats Acts. In the same period 2182 delinquencies were found on 1602 out of a total of about 6000 boats, most of these of a trivial or formal character. Very few cases of overcrowding were found or of imperfect partition of cabin accommodation between the sexes. In a year's time, when the recommendation of the Departmental Committee to prohibit children of school age from living aboard during term-time comes into force, any occasion for overcrowding will be still further diminished.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Dewsbury.

Dr. O. M. Holden gives the Registrar-General's estimate of the population as 55,080. The birth-rate has gone up from 19·0 in 1919 to 23·07 in 1920. The death-rate was 14·23, "the lowest recorded since amalgamation." The infantile mortality, 110, is "still high," 69 of the 140 infant deaths occurred in the first four weeks of life; there were 56 stillbirths, being 4·2 per cent. of the total births. The maternal mortality in connexion with childbirth seems to have been high during the last six years. Dr. Holden reports a serious dearth of properly trained women to act as midwives in the borough; doctors are compelled to fall back upon the antiquated and unsatisfactory method of "handywomen" help. During 1920 the qualified midwives only attended 460 out of 1271 births, or a little more than one-third. In most industrial towns the proportion is more like two-thirds. "The chief occupations (of Dewsbury) are those connected with heavy woollen goods, coal, rags and rag flock, glass blowing, &c." Of 14,060 dwelling-houses, 4450, or 31·65 per cent., are "back-to-back" houses. Dr. Holden, of course, condemns the privy-middens and large ashpits. There are still 2374 privies. The number converted in 1920 was 102. It is to be hoped that the rate of progress will be increased in subsequent years.

Eighty-six observations of smoke emissions from mill chimneys were made, and 24 statutory notices served, but no mention is made of proceedings. Anything beyond a minute or two in the hour of black smoke from a mill chimney is quite inexcusable and a vigorous anti-smoke campaign is urgently needed in these mill districts.

The tuberculosis death-rate was not high, 0·671 for pulmonary tubercle and 0·255 for "other forms," giving a total of 0·92. The rates from 1911 to 1920 indicate that there was no war increase of tuberculosis in Dewsbury (though there has been a decrease since the Armistice). Is this because the war work of Dewsbury was its ordinary work, which included coal-mining, an industry little liable to tuberculosis?

Twenty-one cases of ophthalmia neonatorum were notified. One case died while the eyes were under treatment, in another the right eye was damaged, the eyes of the other 19 cases were ultimately found to be quite clear. Dr. Holden reports a considerable shortage of houses of the smaller type suitable for the average labouring class family. Owing to unemployment, families which applied for corporation houses a year or so ago now find themselves unable to afford them. Owing to high prices war arrears of repairs have not yet been made good. Dr. Holden wants legislation to strengthen the hands of sanitary authorities against careless and dirty tenants.

Tottenham.

The population of Tottenham Urban District in 1920 was estimated to be 156,020, the birth-rate was 26·04, the death-rate 9·3, the infant mortality rate 61·0, and the phthisis death-rate 0·85. Dr. David C. Kirkhope tells us that the infant mortality rate is the lowest on record. He also says: "At the end of the year the housing scheme, both at the Coombes Croft site and the Devonshire Hill site, had been commenced. So many inhabited houses had, during the war, fallen into a condition of serious disrepair, and even dilapidation, that arrears of sanitary reform have by no means been made up ...." and "The methods employed in Tottenham for the disposal of refuse leave much to be desired and it is to be hoped that the problem will receive early consideration and be met with an adequate solution." Under the heading ophthalmia neonatorum, we read: "Thirty-two cases were recorded during the year. These were promptly followed up. In one case, notwithstanding that the child was under medical care, the sight of both eyes was lost. This is the only instance of permanent injury resulting from ophthalmia neonatorum during the year." We should like to italicise "only," because if every population of 150,000 produced one blind child, the toll of damage from ophthalmia neonatorum throughout the country would be terrible.

The medical officer of health receives the notifications of tuberculosis, but the care of the tuberculous rests

with the Middlesex County Council, a very unsatisfactory arrangement for a community of the size of Tottenham. The analysis of the infant deaths shows that 112 out of 248, or nearly half, occurred during the first month of life and brings out the fact that, as in other districts with low infant mortality rates, the neo-natal mortality is untouched and the reduction has been in the later months. Dr. Kirkhope draws attention to the need for further accommodation for the dental service and its extension to mothers—expectant and nursing—and to children under 5 years of age.

In his school medical service report Dr. Kirkhope says: "The impression gained by the examination of school children in this area is that the strain of war has left its mark on the 8–9 years age-group. These children appear to be smaller and less weighty than those your medical officers have been accustomed to inspect in previous years." Dr. Kirkhope puts forward as a probable explanation the lack of such foods as butter, eggs, and milk. The need for a skilled aurist to deal with cases of otorrhœa is mentioned. A method of dealing with verminous heads has been developed by which the worst cases of pediculosis capitis can be remedied in half an hour (provided there are no sores on the scalp) without cutting or damaging the hair. School medical officers who are interested should write to Dr. Kirkhope for details. The usual Table V. shows that a satisfactory percentage of treatment is being secured except for dental defects. The report of the newly-appointed dentist, Mr. Sainty, shows that the work was in arrears and also that the percentage of acceptances of treatment is low, seldom more than 45 per cent. for any school. Much propaganda work among parents is evidently required in Tottenham as elsewhere with regard to the importance of dental care and early treatment.

Chelsea.

The estimated population of this metropolitan borough for 1920 is given as 68,500; the birth-rate was 20·3, which is 7·0 greater than in 1919; the infant mortality rate was 52, the lowest ever recorded. Dr. Louis C. Parkes tells us that the maternity and child welfare work grows. The medical staff has been increased. A "home help" was appointed by the Council in October at a wage of £2 for a 44-hour week (with outdoor uniform). The Chelsea Red Cross Nursing Home for Babies, Edith-terrace, was opened in January and is intended for cases of malnutrition, wasting, &c., which are not usually admitted to ordinary children's hospitals. The general death-rate in Chelsea during 1920 was 11·3. The deaths from pulmonary tuberculosis numbered 73 (41 males and 32 females) and of these no less than 71 per cent. died in institutions. Seventeen cases of ophthalmia neonatorum were notified and 3 additional cases of eye trouble in infants were visited. "Of the total 20 cases, 18 made complete recoveries, 1 made incomplete recovery, and 1 infant remained blind of one eye."

Llanelly.

Dr. Laurence W. Pole tells us that Llanelly, the largest town in Carmarthenshire, is mostly situated on low-lying land on both sides of the river Lliedi, which flows into the Loughor estuary forming the southern boundary of the town. The river is polluted before it reaches Llanelly and the tidal estuary is polluted by the sewage and works of the borough. "The country surrounding Llanelly is mainly agricultural and is very beautiful where it has not been defaced by the sinking of coal pits or the erection of factories .... The chief occupation of the inhabitants is the manufacture of tinplate." Other industries are iron founding, copper smelting, tin stamping and enamelling, galvanising and de-tinning.

The estimated population for 1920 was 38,776. The death-rate was 12·9 and the birth-rate 24·8. The infant mortality rate was high—viz., 110. The tuberculosis death-rate was also high—viz., 1·23, which is to be compared with 0·88 for 1919. During the last six years there have been more female than male deaths from pulmonary tuberculosis—an unusual occurrence for a town. As in some other towns influenza was prevalent during March and April and 45 deaths were attributed to it during the year. "During the year 1920 20 houses were erected (compared with none in 1919, 2 in 1918, 9 in 1917, and 234 in 1913, the maximum)." Dr. Pole confirms the recommendation of his predecessor, Dr. Francis, as to the great need for a maternity home.

Dr. Pole's report as school medical officer shows that the education committee provide no treatment. Such treatment as is given is provided by the general practitioners of the district in return for monthly payments by the workmen. Table V. shows that 270 out of 318 minor ailments were treated and only 137 out of 261 defects of nose and throat; that 189 visual defects and 702 other defects were apparently left untouched; and that no action whatever seems to have been taken with regard to dental defects. Dr. Pole only took over his duties on Nov. 22nd, 1920, and no doubt hopes to report next year that the arrangements made for treating the defects found by medical inspection have been greatly improved.

SCHOOL MEDICAL INSPECTION.

Warrington.

In his report on School Hygiene in the County Borough of Warrington, for 1919, Dr. G. W. N. Joseph, the medical officer of health and school medical officer, classifies the elementary schools in the borough under four heads: four of them are modern, up-to-date schools; nine Church schools of an older type are fairly satisfactory; in eight schools, also of an older type, certain defects of lighting, heating, ventilation, &c., might be remedied; while three old schools, accommodating 1259 children, are "badly constructed, defective from a sanitary point of view, and should be replaced as soon as possible." Most of the schools need redecorating, and it is hoped that the worst will be dealt with "during the coming year." (The report is not dated.) There are still ten schools heated by close stoves, which are objectionable on several grounds. Measles (860 cases), mumps (1225), scarlet fever (96) and diphtheria (71) were the chief diseases prevalent during the year. The number of children examined at the routine inspections of the code groups was 4237, of whom 1783, or 42·08 per cent., were referred for treatment; in addition, 5873 children were examined as "special cases," either in school, or at the inspection clinics. The most numerous defects found in the systematic inspections were want of cleanliness (360), enlarged tonsils, or adenoids, or both (294), and defective vision (207). There were only five cases of organic heart disease, and only 11 of tuberculosis. With regard to nutrition, only 0·8 per cent. were found to be markedly defective, and a further 3·2 per cent. below normal. Of the 2532 children whose eyesight was tested, only 8·1 per cent. were considered to require treatment, but 12·2 per cent. were passed as having "fair vision, not less than $\frac{6}{9}$, and without eye-strain." Only 10 cases of pulmonary or other forms of tuberculosis were diagnosed among the code-group children examined, but as many as 218 school children are known to be suffering from the disease in one form or another, of whom 159 are attending school. Dr. Joseph remarks that "the need for a special institution for treating and educating many of these cases is fully recognised, and will have to be faced in the near future." At present there is no open-air school, nor are there any open-air classrooms, though playgrounds and sheds are used in fine weather during the summer. With regard to physical training, there is no "organiser," and no special instructors have been appointed, but many of the male teachers have had special training in the army. It is to be hoped that these requirements in regard to open-air education and physical training may receive early attention.

VITAL STATISTICS OF LONDON, JULY, 1921.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 10·3 per 1000 of the population, estimated at 4,531,971 persons in the middle of 1920; in the three preceding months the rates had been 8·7, 9·6, and 9·4 per 1000. Among the metropolitan boroughs the lowest rates from these diseases were recorded in Paddington, Chelsea, St. Marylebone, Hampstead, Holborn, and Wandsworth; and the highest in Stoke Newington, Finsbury, Shoreditch, Stepney, Bermondsey, and Woolwich. The prevalence of enteric fever was somewhat greater than in the two preceding months; of the 32 cases notified during the four weeks ended July 30th, 5 cases belonged to St. Pancras and 4 to Wandsworth. There were 27 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 10, 18, and 23 at the end of the three preceding months; the weekly admissions averaged 5, against 2, 5, and 4 in the three preceding months. The prevalence of scarlet fever was about 12 per cent. greater than in the preceding month; this disease was proportionally most prevalent in Stoke Newington, Finsbury, Shoreditch, Stepney, Bermondsey, and Woolwich. The Metropolitan Asylums Hospitals contained 3722 scarlet fever patients at the end of the month, against 3217, 3375, and 3621 at the end of the three preceding months; the weekly admissions averaged 567, against 411, 507, and 506 in the three preceding months. The prevalence of diphtheria was slightly greater than in the preceding month; the greatest proportional prevalence of this disease occurred in Hackney, Finsbury, Shoreditch, Bermondsey, Battersea, and Greenwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 2429, 2121, and 1896 at the end of the three preceding months, numbered 1969 at the end of July; the weekly admissions averaged 250, against 261, 241, and 235 in the three preceding months. Erysipelas was proportionally most prevalent in Hammersmith, Fulham, Finsbury, the City of London, Shoreditch, Southwark, and Deptford. Nine cases of encephalitis lethargica were notified during the month, against 77, 56, 24, 14, and 18 in the preceding months of the year; of these, 2 belonged to Southwark. The notified cases of cerebro-spinal fever numbered 7, against 12, 11, and 5 in the three preceding months; of these, 2 belonged to Lambeth. The 30 cases of puerperal fever included 6 in Islington, 3 in Fulham, and 3 in Stepney. The mortality statistics in the table relate to the deaths of civilians actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ended July 30th the deaths of 3394 London residents were registered, equal to an annual rate of 9·8 per 1000; in the preceding months the rates had been 12·6, 11·2, and 9·4 per 1000. The death-rates ranged from 6·6 in Hampstead, 7·1 in Fulham, 7·4 in Wandsworth, 7·9 in Hackney, and 8·1 in Battersea, to 11·7 in Finsbury, 12·1 in Stoke Newington, 12·3 in Shoreditch, 12·5 in Kensington, and 13·2 in Stepney. The 3394 deaths from all causes included 247 which were referred to the principal infectious diseases; of these, 3 resulted from enteric fever, 12 from measles, 15 from scarlet fever, 40 from whooping-cough, 53 from diphtheria, and 124 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded in Chelsea or in the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Fulham, the City of Westminster, St. Marylebone, Holborn, Finsbury, and Battersea; and the highest in Hammersmith, Stepney, Poplar, and Bermondsey. The three fatal cases of enteric fever were 2 fewer than the average in the corresponding period of the five preceding years. The 12 deaths from measles were one-fifth of the average; of these, 3 belonged to Stepney, 2 to Islington, 2 to Poplar, and 2 to Southwark. The 15 fatal cases of scarlet fever exceeded the average by 4; of these, 4 belonged to Bermondsey, 2 to Stepney, and 2 to Camberwell. The 40 deaths from whooping-cough were one below the average; of these, 6 belonged to Camberwell, 4 to Islington, and 3 to each of the boroughs of Fulham, St. Pancras, Lambeth, and Wandsworth. The 53 fatal cases of diphtheria were 15 in excess of the average; the greatest proportional mortality from this disease occurred in St. Pancras, Islington, Stoke Newington, Poplar, Bermondsey, Greenwich, and Lewisham. The 124 deaths from infantile diarrhœa exceeded the average by 66; this disease was proportionally most fatal in Hammersmith, Shoreditch, Stepney, Poplar, Deptford.

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING JULY, 1921.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1920.	Notified Cases of Infectious Disease.												Deaths from Principal Infectious Diseases.									Deaths from all causes.	Death-rate per 1000 living.
		Enteric fever.	Other continued fevers.	Small-pox.	Scarlet fever.	Diphtheria.*	Erysipelas.	Poliomyelitis and polioencephalitis.	Encephalitis lethargica.	Cerebro-spinal fever.	Puerperal fever.	Total.	Annual rate per 1000 persons living.	Enteric fever.	Small-pox.	Measles.	Scarlet fever.	Whooping-cough.	Diphtheria.*	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	4,531,971	32	—	—	2350	1061	129	9	9	7	30	3567	10·3	3	—	12	15	40	53	124	247	0·7	3394	9·8
West:																								
Paddington ...	149,673	—	—	—	58	21	4	—	1	—	—	84	7·3	—	—	—	—	2	—	4	6	0·5	101	8·8
Kensington	164,177	2	—	—	79	19	3	—	—	—	—	103	8·2	—	—	—	—	1	2	3	6	0·5	157	12·5
Hammersmith ...	136,200	1	—	—	85	32	6	1	—	—	1	126	12·1	—	—	—	—	1	2	7	10	1·0	94	9·0
Fulham	158,621	1	—	—	56	32	7	—	1	—	3	100	8·2	—	—	—	1	3	—	1	5	0·4	87	7·1
Chelsea	62,987	—	—	—	15	5	—	—	—	—	1	21	4·3	—	—	—	—	—	—	—	—	—	53	11·0
City of Westmin'r	132,615	2	—	—	63	18	2	—	—	—	2	87	8·6	—	—	—	—	—	—	2	2	0·2	104	10·2
North:																								
St. Marylebone ...	101,856	1	—	—	29	21	4	—	1	1	—	57	7·3	—	—	—	—	1	—	—	1	0·1	71	9·1
Hampstead ...	91,519	—	—	—	18	13	2	—	—	—	—	33	4·7	—	—	—	1	1	1	1	4	0·6	46	6·6
St. Pancras	228,178	5	—	—	98	41	4	1	—	—	1	150	8·6	—	—	—	—	3	4	2	9	0·5	159	9·1
Islington	335,907	1	—	—	168	92	5	—	—	—	6	272	10·6	1	—	2	1	4	7	5	20	0·8	260	10·1
Stoke Newington ...	52,984	1	—	—	62	12	2	—	—	—	—	77	18·9	—	—	—	—	—	1	1	2	0·5	49	12·1
Hackney	225,372	—	—	—	117	65	5	—	—	—	1	188	10·9	—	—	—	—	2	2	8	12	0·7	136	7·9
Central:																								
Holborn	39,676	—	—	—	6	11	—	—	—	—	—	17	5·6	—	—	—	—	1	—	—	1	0·3	33	10·8
Finsbury	78,291	2	—	—	64	24	8	—	—	1	—	99	16·5	—	—	—	—	—	1	1	2	0·3	70	11·7
City of London ...	14,447	—	—	—	9	4	1	—	—	—	—	14	12·6	—	—	—	—	—	—	—	—	—	10	9·0
East:																								
Shoreditch	102,044	1	—	—	100	44	5	—	—	—	2	152	19·4	—	—	—	—	—	1	6	7	0·9	96	12·3
Bethnal Green ...	114,471	—	—	—	50	22	3	—	—	1	—	76	8·7	—	—	—	1	2	1	2	6	0·7	75	8·5
Stepney	241,770	—	—	—	196	65	10	2	—	—	3	276	14·9	—	—	3	2	1	2	17	25	1·3	244	13·2
Poplar	159,766	1	—	—	110	31	5	—	—	1	1	149	12·2	1	—	2	—	—	3	11	17	1·4	138	11·3
South:																								
Southwark	187,142	1	—	—	89	42	9	—	2	—	2	145	10·1	—	—	2	1	1	1	7	12	0·8	150	10·4
Bermondsey ...	129,189	—	—	—	112	49	3	—	1	—	1	166	16·8	—	—	—	4	1	5	4	14	1·4	113	11·4
Lambeth	293,572	1	—	—	126	39	9	3	1	2	2	183	8·1	—	—	—	—	3	3	9	15	0·7	234	10·4
Battersea	165,664	—	—	—	79	48	5	—	—	—	1	133	10·5	—	—	1	—	1	1	2	5	0·4	103	8·1
Wandsworth ...	346,990	4	—	—	97	67	9	—	—	—	1	178	6·7	1	—	—	—	3	4	6	14	0·5	196	7·4
Camberwell ...	284,712	2	—	—	145	54	9	2	1	1	1	215	9·8	—	—	1	2	6	3	5	17	0·8	219	10·0
Deptford	115,636	1	—	—	66	21	7	—	—	—	—	95	10·7	—	—	1	1	1	—	5	8	0·9	102	11·5
Greenwich	102,408	1	—	—	60	32	—	—	—	—	—	93	11·8	—	—	—	—	—	3	4	7	0·9	73	9·3
Lewisham	174,438	2	—	—	77	37	—	—	—	—	1	117	8·7	—	—	—	1	1	4	4	10	0·7	114	8·5
Woolwich	141,666	2	—	—	116	40	2	—	1	—	—	161	14·8	—	—	—	—	1	2	7	10	0·9	107	9·8

* Including membranous croup.

Greenwich, and Woolwich. In conclusion, it may be stated that the aggregate mortality in London during July from these principal infectious diseases was 14 per cent. above the average in the corresponding period of the five preceding years. The deaths from influenza in London during July numbered 15, against 149, 77, and 30 in the three preceding months; these deaths were less than a tenth of the average in the corresponding period of the five preceding years.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments have been made:—Surg. Comdrs.—C. V. Griffiths to the *Delhi*, as Senior Medical Officer and Squadron Medical Officer; and G. O. M. Dickenson to the *Victory*, addl., for Haslar Hospital. Surg. Lieut.-Comdrs.—F. J. D. Twigg to the *Pembroke* for R.N. Hospital, Chatham; and M. S. Moore to the *President*, addl., for Cambridge Naval School. Surg. Lieut.—T. Madill to the *Cornflower*. Surg. Comdrs. T. B. Shaw to the *Vivid* for R.N. Barracks (temp.); L. C. Rowan-Robinson to the *Blake*; E. T. Burton to the *Malabar*, addl., for H.M. Dockyard, Bermuda; and T. W. Myles to the *New Zealand* (temp.); P. F. Alderson to R.N. Hospital, Plymouth, for general duties and as Medical Transport Officer, Devonport; and C. R. Rickard to the *Lowestoft* as Senior Medical Officer and Fleet Medical Officer. Surg.-Lieut. J. W. Tighe to the *Espiegle*.

Surg. Lieut-Comdr. F. C. Alton and Surg. Lieut. A. G. Bee placed on Emergency List.

ROYAL ARMY MEDICAL CORPS.

Maj. J. S. Dunne relinquishes the acting rank of Lt.-Col.

W. L. Cowardin (Surg. Lieut.-Comdr., R.N., ret.) to be temp. Maj.

Temp. Capt. W. M. M. Jackson to be temp. Maj. whilst specially employed as D.A.D. of Hygiene.

Temp. Maj. N. H. Oliver relinquishes his commn. and retains the rank of Maj.

Capt. G. T. Baker resigns his commn.

Temp. Capt. E. E. Chipp relinquishes the acting rank of Maj.

Temp. Hon. Capt. D. E. Carter relinquishes his commn. and retains the hon. rank of Capt.

S. H. Woods, late temp. Capt., to be temp. Capt. whilst employed as a Dental Surg.

The undermentioned Capts. to be temp. Majs. whilst specially employed as D.A.D.'s of Hygiene: H. S. Milne and R. W. Galloway.

Capt. H. Bedingfield retires, receiving a gratuity, and is granted the rank of Maj.

The undermentioned temp. Capts. relinquish their commns. and retain the rank of Capt.: C. B. Dyson, S. H. Scott, and R. B. Jenkins.

Maj. E. McK. Williams, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

ARMY DENTAL CORPS.

Temp. Capt. J. Duguid, Dental Surg., from Gen. List, to be Capt.

Temp. Capt. P. P. Hogan, Dental Surg., from Spec. List, to be Lieut., with the temp. rank of Capt., but without the pay or allowances of that rank.

Flight-Lieut. J. Wren, from R.A.F., Dental Branch, to be Lieut.

SPECIAL RESERVE OF OFFICERS.

Capt. T. Patterson relinquishes his commn. and retains the rank of Capt.

TERRITORIAL FORCE.

Lt.-Col. H. G. Smeeth having attained the age limit is retired and retains the rank of Lt.-Col. with permission to wear the prescribed uniform.

Capt. (Bt. Maj.) J. L. Joyce resigns his commn. and retains his rank.

Capt. A. W. Clarke resigns his commn. and retains the rank of Capt.

Maj. E. L. Gowlland to be Lt.-Col., and to command the 4th London Field Ambulance.

Capt. H. D. Davis to be Maj.

Capt. A. H. D. Smith (late R.A.M.C.) to be Capt.

Capt. F. A. E. Crew to be Maj., and command the Med. unit of the Edinburgh Univ. O.T.C.

Capt. S. S. Greaves vacates the appt. of D.A.D.M.S., W. Rid. Div.

Capts. C. G. Meade and W. Goldie resign their commns. and retain the rank of Capt.

Lieut. L. R. G. de Glanville to be Capt.

3rd Southern Gen. Hosp.—Capt. W. B. Secretan resigns his commn. and retains the rank of Capt.

TERRITORIAL FORCE RESERVE.

Lt.-Col. E. B. Dowsett from Gen. List, R.A.M.C., T.F., to be Col.

Maj. C. H. Welch, from R.A.M.C. (T.F.), to be Maj.

Capt. H. Foxton from R.A.M.C., T.F., to be Maj.

Capt. C. M. Smith from 1st Lond. (C. of L.) San. Co. to be Capt.

INDIA AND THE INDIAN MEDICAL SERVICE.

Lt.-Cols. G. H. Bowle-Evans and F. Wall to be Cols.

Bt.-Col. (now Col.) W. H. Ogilvie to be acting Col. while holding the appt. of A.D.M.S., 7th Ind. Bn., Mesopotamia and Egyptian Expeditionary Forces.

Maj. W. W. Jeudwine to be acting Lieut-Col. while commanding the Lucknow Casualty Clearing Station in France.

Temp. Capt. H. R. Shahane to be acting Lieut.-Col. while commanding a Combined Field Amb.

The King has approved the retirement of Lieut.-Col. de V. Condon, in consequence of ill-health.

Major J. McCoy, civil surgeon, Darrang, has been granted a year's leave. The services of Major P. S. Mills have been placed temporarily at the disposal of the Government of Bihar and Orissa. Dr. A. L. Mackenzie, of the Women's Medical Service, has taken over charge of the Bettiah Raj Dufferin Hospital. Major R. D. Saigol, ophthalmic surgeon, General Hospital, Rangoon, has been appointed temporarily to act as Lecturer in Materia Medica in the Burma Government Medical School. Capts. H. S. Anand and K. C. Dube have been appointed Deputy Sanitary Commissioners in the United Provinces. Lt.-Col. R. M. Carter, C.B., of Mesopotamian fame, has proceeded on leave, and during his absence an Indian graduate acts as Professor of Pathology and Morbid Anatomy and Curator of the Pathological Museum, and Major B. Higham as Dean, Grant Medical College, Bombay. Major Anderson, Agency Surgeon, has proceeded on leave. Major J. A. S. Phillips is transferred permanently and Capt. H. S. Anand temporarily to the Sanitary Department of the United Provinces. Lt.-Col. J. B. Christian acts as Surgeon Superintendent, St. George's Hospital, Bombay, vice Lt.-Col. A. Street who has proceeded on leave. Hon. Lt.-Col. R. Row, O.B.E., acts as First Physician and Professor of Medicine and Therapeutics, Grant Medical College, Bombay. Major M. J. Holgate has been appointed to Jail Department, Madras. Major J. H. Horne has been posted to Bombay Bacteriological Laboratory. Major C. H. Barber, civil surgeon, Alagarh, has proceeded on eight months' leave. Major A. Cameron, O.B.E., special malaria officer, United Provinces, has been appointed Civil Surgeon, Allahabad, in addition to his other duties. Lt.-Col. H. A. F. Knapton has been granted an extension of furlough, and on return acts as Surgeon Superintendent, St. George's Hospital, Bombay; and furlough has been granted to Lt.-Col. S. C. Evans. Major Crookshank has been appointed Assistant Director, The King's Institute, Guindy, Madras. Capt. Rowntree, Assistant Director-General, has proceeded on nine months' leave, and Capt. E. S. Goss officiates for him. Major Williams has been appointed to act as Deputy Director-General of the Indian Medical Service. Major J. A. S. Phillips has been confirmed in the appointment of Special Malaria Officer, United Provinces of Agra and Oudh.

DEATHS IN THE SERVICES.

Colonel William Henry Bull, A.M.S. (T.), who died on August 14th at Oswald's House, Stony Stratford, at the age of 69, had been a medical student at St. George's Hospital and qualified in 1874 with the M.R.C.S. Eng. He obtained the L.R.C.P. Lond. in the following year and the F.R.C.S. Edin. in 1882. An enthusiastic volunteer he was particularly interested in ambulance work. During the war he was chief organiser for the Midlands in connexion with the Medical Staff Corps and was responsible for the administration of the Birmingham District Voluntary Aid Detachment. He had been county director of Bucks and was formerly Commissioner of Medical Services under the Ministry of National Service and the Ministry of Pensions. Colonel Bull was a justice of the peace, deputy lieutenant for the County of Bucks, and Knight of Grace of the Order of St. John of Jerusalem, and an hon. surgeon to the King.

The Croix de Guerre has been conferred by the President of the Czecho-Slovak Republic upon Surg. Comdr. C. J. E. Cock, R.N., in recognition of services during the war. The King has given unrestricted permission to the officer concerned to wear the decoration.

LITERARY INTELLIGENCE.—Messrs. W. Heffer and Sons, Ltd., Cambridge, have in the press a volume entitled "The Autonomic Nervous System," Part I., by Prof. J. N. Langley, F.R.S.

Obituary.

HERBERT EDMUND CUFF, O.B.E., M.D. LOND., F.R.C.S. ENG.,

PRINCIPAL MEDICAL OFFICER, METROPOLITAN ASYLUMS BOARD.

A FORTNIGHT ago we briefly recorded the tragic death, at the age of 57 years, of Dr. H. E. Cuff. On the afternoon of August 16th, in an endeavour to save his daughters, aged 15 and 12 respectively, who had got into difficulties while bathing at Burnham Overy on the Norfolk coast, Dr. Cuff was drowned and his children with him.

Dr. Cuff received his medical education at Guy's Hospital, graduated M.B., B.S. Lond. in 1888, took the F.R.C.S. Eng. two years later, and the M.D. Lond. in 1891. After holding resident appointments at Guy's Hospital and at the Leeds General Infirmary, he entered the service of the Metropolitan Asylums Board, and in 1897 was appointed medical superintendent of the North-Eastern Fever Hospital, relinquishing that post eight years later on becoming a member of the head office staff. He became principal medical officer to the Board, devoting his whole time to his office, except for a period during the war when he was resident head of the Belgian Refugee Camp at Alexandra Palace; for this service he was awarded the O.B.E. Dr. Cuff was the author of a number of useful books for nurses, including his reprinted "Lectures on Medicine to Nurses," and he contributed a section on Infectious Diseases to Whiting's "Aids to Medical Diagnosis."

Dr. Lauriston Shaw, one of the medical members of the Metropolitan Asylums Board, writes as follows:—

In the last few years I have seen a good deal of Dr. Cuff's work as principal medical officer of the Board. Having known him as a student at Guy's I expected to find him able and hard working. But the Board requires other qualities besides these in its P.M.O. In his dealings with the Board itself, its immense staff, both lay and medical, and its numerous and varied types of institution, this officer requires large stores of sympathy, tact, and common-sense, besides technical knowledge of many branches of his profession; all these Cuff had. His earlier work for the Board was carried out solely in the infectious fever service, but this did not prevent him from acquiring practical knowledge of, and maintaining a keen interest in, the various other departments of medical work—mental diseases, eye diseases, tuberculosis, venereal diseases, &c., which have been gradually added to the Board's activities. It was characteristic of Cuff's energy that when the Board was first entrusted with the administration of institutions for the treatment of tuberculosis he spent some portion of his well-earned vacation as locum tenens superintendent of a sanatorium in order to familiarise himself with the special medical and administrative problems of these institutions. It is therefore natural that the Board placed implicit reliance on Dr. Cuff's judgment in the advice he gave it with regard to the constantly recurring medical problems that arose in the course of its ever-extending work. His relations with his professional colleagues administering the institutions and treating the patients therein were as happy as those which subsisted between him and the members of the managing subcommittees. Each section knew that Cuff's advice would be inspired with a whole-hearted desire to do what was best for the afflicted persons entrusted to the Board's care. Though he was always busy he was at all times accessible to those needing his advice or assistance.

Dr. Cuff's sudden and tragic death at the height of his usefulness comes as a severe blow to many beside his associates at the Metropolitan Asylums Board. He leaves a widow whose terrible loss has elicited widespread sympathy.

JOHN WARRINGTON HAWARD, F.R.C.S. ENG.,

CONSULTING SURGEON TO ST. GEORGE'S HOSPITAL.

WE regret to announce the death in his eightieth year of Mr. John Warrington Haward, consulting surgeon to St. George's Hospital, which occurred on Aug. 20th, at his residence, Manor End, Berkhamsted.

John Warrington Haward was born in 1841, the youngest of the ten children of Mr. James Haward, of Great Baddow, Essex, and entered St. George's Hospital as a student in 1860, when Cæsar Henry Hawkins Prescott Hewett, and George Pollock were the leading surgeons of the institution, and when the demonstrator of anatomy was Henry Gray, whose death occurred from small-pox before he was elected to the staff. Haward was a successful student, being William Brown Exhibitioner in medicine and surgery, and on qualification proceeded to hold the office of house surgeon at Westminster Hospital, and later was resident surgical officer at the Great Ormond-street Children's Hospital. Here, after taking the F.R.C.S., he was elected assistant surgeon in 1870, and his experiences among children dictated his special line of surgical work as far as specialism was then carried in surgery. From 1871 to 1874 Haward discharged the duties of surgical registrar, curator of the museum, and demonstrator of morbid anatomy at St. George's Hospital, and in 1875, on the retirement of Sir Prescott Hewett, whose clinical clerk he had been, he was elected assistant surgeon to St. George's Hospital. He became full surgeon five years later, and he maintained his connexion with the hospital as surgeon, and later as consulting surgeon, until the day of his death.

During this long association with St. George's Hospital Haward gained the respect and affection of generations of medical students by unvarying kindness and courtesy, by the clearness and simplicity of his teaching, and by the high standard of conduct which he manifested—without talking about it. He was ever for essentials in surgery and he arrived on the scene as a hospital surgeon when the essentials themselves were in doubt, and when it was necessary for the teacher both to keep an open mind and to maintain authority; for the year in which he was appointed assistant surgeon to St. George's Hospital marked some of the keenest discussions as to the new antiseptic doctrines. Haward approached the situation from the point of view that caution was the best guarantee for real advancement in learning, and while pleading for the scientific use of the imagination and for the free play of the speculative as well as of the critical faculties, he was never tired of pointing out that the limits and criteria of authority must be considered. This attitude of mind lent to his teaching an old-fashioned flavour which in reality it did not possess; for other of his favourite themes were the value of prevention and the need for early diagnosis, and he advocated these things in words which might express the teaching of to-day. In the operating theatre he was quick to learn the lessons which Lister's discoveries were bringing home to the medical profession, and that he was no mere follower of tradition was shown by his treatise on orthopædic surgery, in which, while declaring that there could be no good reason for the separate practice of orthopædic surgery, he showed that the general body of the profession at his date were not well-equipped in the treatment of many simple cases of deformity.

Haward was a notable figure in the charitable world. He made few public appearances save in the cause of charity, but the esteem in which he was held by his own profession may be estimated by the fact that he had been a Hunterian Professor of the Royal College of Surgeons of England, and President of the Royal Medical and Chirurgical Society, as well as President of the Section of Surgery of the Royal Society of Medicine. He was on the Committee of the Charity Organisation Society, of the Mansion House Council on the Dwellings of the Poor, and of the Invalid Children's Association—of this body he had been president—while he was for a long time Treasurer of the Society for the Relief of Widows and Orphans of Medical Men. Sir Dyce Duckworth, in a letter to us regretting the loss of a life-long friend, alludes to Haward's "skill, wisdom, and high-mindedness," and in those three characteristics sums up the man.

Mr. Warrington Haward married the daughter of the late Dr. James Nicholls, F.R.C.S., of St. Columb, and leaves a widow and two sons. A son who was intended for the medical profession died young.

Correspondence.

"Audi alteram partem."

ANÆSTHESIA WITH NITROUS OXIDE AND OXYGEN UNDER PRESSURE.

To the Editor of THE LANCET.

SIR,—An article with this title, published in your issue of August 13th (p. 326), is of peculiar interest to me, in that so long ago as June 28th of last year Dr. Otto Leyton attended the house committee of the London Hospital, Whitechapel, E., and explained a new method of giving anæsthetics under increased air pressure. He reported that a special theatre should be built, in which this increased air pressure, amounting to an atmosphere and a half, could be provided. He was questioned closely by the committee as to the effect of such conditions upon the surgeons, anæsthetists, dressers, and nurses working in the theatre. He finally reported that he hoped to be able to collect the total funds necessary for the building and equipment of such a theatre.

The question was referred by the committee to the Medical Council for their consideration and report. For the moment, the scheme was held up on account of financial difficulties which had overtaken all hospitals, but we still have hopes of installing this theatre, not only for the administration of anæsthetics on diabetic patients, in whom Dr. Leyton is particularly interested, but for any patient requiring long anæsthesia under nitrous oxide and oxygen.

I am, Sir, yours faithfully,

E. W. MORRIS,
House Governor, London Hospital.

Whitechapel, E., August 24th, 1921.

THE SUPPOSED EXTERNAL EFFECTS OF HUMAN VISION.

To the Editor of THE LANCET.

SIR,—As Dr. C. Russ has apparently taken some offence[1] at the audacity of my criticism, perhaps you will allow me to express my regret that his feelings should have been hurt, and to assure him that, far from intending disrespect, I consider that he himself is under-estimating the importance of his discovery, and consequently the scepticism it justifies. I cheerfully admit that I have no academic qualifications in physics (owing to economic circumstances he also deplores), and that far from verifying his experiments as they deserve I was guilty of typing my criticism immediately upon perusal of his paper. I was not, however, aware that there was any other sanction for comment than interest and relevancy; the publication of a paper in THE LANCET invites discussion by mere practitioners, independent of technical degrees, provided they be well-informed.

My letter was justified by the further information it elicited from Dr. Russ—namely, that the new force is reflected like light and is active in (some) inverse ratio to distance, fundamental facts that Dr. Russ had omitted from his paper. Further, I did not criticise any of his observations or experiments but, accepting his findings, drew certain obvious inferences from his work with a view to verificatory experiment. In particular I tried to show that it followed from his position that the force must be emanating from the macula only or chiefly: that it must be refracted like light; and that within the eye it must be of the greatest intensity since only a minute proportion can reach the objective. I further suggested crucial and inexpensive experiments—an artificial ametropia by interposition of lenses, even cycloplegia—to decide the refraction of the radiant force, and the employment of a patient suffering from a central scotoma (inactive fovea) to verify its macular origin, this suggestion being made to me by an eminent ophthalmologist.

[1] THE LANCET, August 13th, p. 362.

These deductions, though theoretical, are vital to further induction. They point to a force emanating from the fovea, of great intensity and behaving as regards propagation (reflection, refraction, conduction, &c.) in the same way as light. Alternatively, so onerous an hypothesis throws doubt upon the data, especially in view of the complexity and delicacy of the experiments. My scepticism was aroused solely by these considerations, and by the fact that the optical significance of fixation had apparently been overlooked by Dr. Russ and the "leaders of science" he has consulted. This single oversight, following naturally from the methodological error of entering upon a research "in order to give my theory the support of some experimental evidence," leads inevitably to the artificial limitation he places upon his research, the treatment (from preconception) of vision as an un-analysable thing and the exclusion of the eye from consideration and experiment. His problem, even as he stated it, was the detection and demonstration of an obscure and doubtful concomitant of eye-functioning; yet he allowed, so far as can be judged from his paper, his attention to be wholly occupied by apparatus, to the neglect of the properties of this complex organ—the real object for his study. This is all that I meant by "experiment outrunning reflection," and though he errs in the fashion and in good company, neither titles nor seniority nor argumenta ad hominem can force me to recognise such thinking as anything but playing at science.

Finally, I did not introduce psychology—which is not a "force" though it may be "little-known"—to explain the phenomena. Dr. Russ made a psychological phenomenon his starting-point ("the fact that the direct gaze or vision of one person soon becomes intolerable to another person suggested to me, &c."). I merely gave to this psychological fact its psychological interpretation; he, by his own account, forced upon this a physical interpretation and entered upon his research for the purpose of substantiating this.

I must apologise for troubling Dr. Russ with questions that may have been answered at the Congress of Ophthalmologists; but, like many other readers of THE LANCET, I was not there, and like them would be glad to have the matter cleared up, as I for one am not yet wholly an unbeliever.

I am, Sir, yours faithfully,

Glasgow, August 15th, 1921. IAN D. SUTTIE.

THE OBJECTIVE STUDY OF NEUROSIS.

To the Editor of THE LANCET.

SIR,—In your leading article on Dr. F. L. Golla's Croonian lectures you emphasise the fact that the value of his researches into the physical side of functional nervous diseases resides less in his conclusions tentatively advanced than in the orientation they exhibit towards a sorely neglected side of practical medicine. You further make it clear that alterations in neuro-glandular mechanism, muscle tone, &c., do not necessarily afford proof that there is no psychogenic derivation in hysteria and other psychoneuroses and neuroses.

It is, however, essential that those working in this physiological field should not of necessity deduce that such physical changes are the cause of functional diseases, even should they find such changes in every instance. In pursuing research in the real scientific manner, that is, by attempting to find a truth, we must beware of attempting to prove theories which accord with our own beliefs and desires.

Hence in this particular field of work one must remember not merely that physical disabilities may exist independently of psychic disabilities in the same patient, but, and much more important, that two other explanations present themselves, each having a considerable amount of evidence in its favour.

In the first place, a physical disability may act as a stimulus to a psychic complex and produce a psychic reaction which may be cleared up by psychotherapeutic treatment in spite of the physical stimulus

remaining, though naturally, under such circumstances, it would be better to deal also with the physical side of the question. In the second place, and more important still, the question whether a psychic stimulus may not affect the sympathetic system and the glandular secretions to a much larger extent than is at present believed still requires more investigation. We know that under suitable psychic stimuli the salivary and gastric glands vary their secretions; that the same applies to secretions of the genital organs; that the emotion of fear will delay or prevent menstruation; and recently I have found that an artificially produced emotion of fear under hypnosis will raise the blood pressure and that such pressure will remain raised for a considerable period after all other signs or feelings of fear have disappeared in the patient.

Such facts as these are suggestive on the positive side; on the other side it is difficult to see how on Dr. Golla's theory a physical disturbance of mechanism constitutes the primary factor in all functional diseases when we consider some of the minor and commonplace examples. For instance, what physical disturbance can be suggested that should cause a woman to have a fear, amounting to horror, of birds when that same woman is not even afraid of rats or mice? Numerous other examples of minor phobias and minor obsessions might be given and I see no reason to doubt a similar cause for these as for major cases. On this side also one must not be dogmatic, and one should be prepared to examine the facts whether they are obtained in the laboratory or by psycho-analytic investigation. One cannot, however, too strongly emphasise the necessity of avoiding premature conclusions that psychical phenomena must have physical causes, and vice versa.

I am, Sir, yours faithfully,

PAUL BOUSFIELD,
Physician to the London Neurological Clinic.

August 21st, 1921.

Medical News.

UNIVERSITY OF MANCHESTER.—The Manchester Education Committee has awarded to Mr. Joseph Parness and Miss Muriel M. Edwards University Scholarships in the Faculty of Medicine of the value of £60 per annum for five years.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.—The Goldsmid Entrance Exhibitions of 112 guineas each have been awarded to A. E. Blake Pritchard, King's College, Cambridge; and N. L. White, St. John's College, Cambridge.

University College Hospital: Annual Dinner.—The annual dinner of Old Students of University College Hospital will be held at the Imperial Restaurant, Regent-street, London, on Thursday, Oct. 6th, at 7.30 P.M. The chair will be taken by Dr. Henry D. Waugh. The secretaries are Dr. A. M. H. Gray and Mr. Gwynne Williams.

"OUR DAY."—An appeal is being made by the Joint Council of the Order of St. John and the British Red Cross Society for flag-sellers on "Our Day," which this year will be on Oct. 1st. Ladies willing to sell flags are asked to send their names to 19, Berkeley-street, W. 1, as soon as possible, indicating the district which they prefer.

THE NEW HARWICH-ZEEBRUGGE ROUTE.—The thrice-weekly service opened this month between London and Zeebrugge via Harwich affords a comfortable and expeditious way of reaching the Belgian watering-places and the Flanders battlefield, as well as a starting-point for continental travel. The twin-screw steamship *Roulers* (late *Vienna*) leaves Harwich on Monday, Wednesday, and Saturday about midnight, returning from Zeebrugge on Tuesday, Thursday, and Sunday nights. Travellers can sleep six hours or more in two- or four-berth cabins and breakfast on board at the Belgian end of the journey if not pressed to catch the early train. It is possible by this route to leave Liverpool-street at 8.40 P.M. on Saturday, spend 18 hours in Belgium, visiting Blankenbergh, Ostend, and Bruges, reaching London again at 8 A.M. on Monday morning. No passport is now required by British subjects travelling by these week-end excursions. The only hardship is the stuffiness of the cabins, which apparently the most up-to-date navigation is unable to mitigate.

Sir Charles Bedford has been appointed honorary adviser to the Secretary of State for the Colonies on questions relating to power and industrial alcohol in the colonies and protectorates.

TRAINING FOR DISABLED NURSES.—The Ministry of Labour announces Oct. 31st as the closing date for applications under the training scheme. This scheme allows for the payment of training fees and maintenance allowance in addition to pension for nurses who, by reason of any disablement due to war service, are unable to return to their pre-war occupation. Applications for consideration must reach the Controller, Women's Training Branch, Ministry of Labour, St. Ermin's, Caxton-street, London, S.W. 1, on or before the closing date, except that nurses who may be demobilised after that date may apply within three months of demobilisation, and nurses who on that date are in attendance at a convalescent centre of the Ministry of Pensions, or as in-patients at a hospital of the War Office or Ministry of Pensions, may apply within three months of their discharge.

HEALTH WEEK.—The object of health week, which is to be held from Oct. 9th to 15th, is to focus public attention for one week in the year on matters of health, and to arouse that sense of personal responsibility for health without which all public work must fall far short of its aims. The chairman of the movement is the Lord Mayor of London, the vice-chairman is Prof. H. R. Kenwood, and Prof. A. Bostock Hill is chairman of the executive committee. The celebration of health week was instituted in 1912, and in 1914, at the request of a meeting of local authorities, the Royal Sanitary Institute appointed a committee to undertake the central organisation; but local celebrations in each centre are controlled by local committees. The programme is left in the hands of the local committees, which may take up a general health campaign or may attempt to concentrate public attention on some particular problem. Questions of a controversial nature are avoided, and stress is laid not on disease processes, but on the benefit to be derived from regard to the laws of health, and the saving of life and comparative immunity from disease which result from an efficient health administration and personal regard for health. Further information may be obtained from the Secretary, Mr. E. White Wallis, 90, Buckingham Palace-road, London, S.W.

DONATIONS AND BEQUESTS.—Mr. Sydney Webb, pharmaceutical chemist, Macclesfield, left £6578, and bequeathed £1000 to St. Dunstan's Hostel for the Blind, £300 to Macclesfield General Infirmary, and £200 to the Benevolent Fund of the Pharmaceutical Society of Great Britain.—The late Mr. Alfred Pointon, J.P., of Birmingham, has left by will £1250 to the Children's Hospital, Birmingham, to endow a bed in memory of his daughter; £2500 to the General Hospital, Birmingham; and £2500 to Queen's Hospital, Birmingham, for similar purposes; £1750 each to the Women's Hospital, Birmingham; the Orthopædic and Spinal Hospital, Birmingham; the Blind Institution, Birmingham; Eye Hospital, Birmingham; Ear and Throat Hospital, and the Skin and Urinary Hospital, Birmingham; £2000 to Middlemore's Homes, Birmingham; £1750 to the Deaf and Dumb Institution, Birmingham; £2000 to the Birmingham and District Crippled Children's Union; £1000 to Dr. Stephenson's National Children's Home; and £500 to the Birmingham Dispensary.—Mr. William Sutcliffe, a Manchester merchant, bequeathed over £12,000 for Manchester institutions, including amongst others £1000 to each of the following: Royal Infirmary, Salford Royal Hospital, Ancoats Hospital, and St. Mary's Hospitals for Women and Children; £500 to each of the following: St. Dunstan's Hospital for the Blind, Heywood Blind Aid Society, Northern Counties Hospital for Incurables; £300 each to Northern Hospital for Women and Children, Manchester Victoria Memorial Jewish Hospital; £250 to Manchester Children's Hospital; £200 each to Manchester and Salford Hospital for Skin Diseases, Royal Albert Asylum, Lancaster, National Library for the Blind, Christie Hospital (Cancer Home), Royal Schools for Deaf and Dumb; £100 each to St. John's Hospital for the Ear, the Ear Hospital, Adult Deaf and Dumb Institution. The board of management of St. Mary's Hospitals, Manchester, has received £1152 from the Hospital Sunday Fund.—The board of management of the Royal Infirmary, Manchester, acknowledges the endowment of two cots by the "A" and "D" Divisions of the City Police Force; the endowment in each case is provided by an annual subscription of 50 guineas.

WHOOPING-COUGH EPIDEMIC AT ST. KILDA.—Dr. Shearer, who visited St. Kilda on August 23rd to inquire into an outbreak of whooping-cough reported by wireless on August 19th, has forwarded his report to the Scottish Board of Health. He found that cases of whooping-cough had been occurring on the island from the end of

July. In all but one of the 17 inhabited houses whooping-cough was present, the exception being that of Nurse Mackenzie, who had only returned to the island the night preceding his visit. Whilst cases were to be seen in different stages of the disease, from the late catarrhal to the late paroxysmal, no one at the time of his visit was seriously ill and in no case was there any complication. Dr. Shearer notes that there was a similar epidemic on the island 29 years ago. In the present epidemic no person over the age of 29 has developed whooping-cough, but of the 40 inhabitants under that age all but four have contracted it. These four are the nurse's two boys and a little girl, all of whom have just returned from a holiday on the mainland, and a young woman of 27 years, who had whooping-cough when on the mainland several years ago. Dr. Shearer suggests that this incidence would appear to be strong proof of the rarity of second attacks.

SALFORD MILK-SUPPLY.—In the annual report of the borough analyst of Salford (Mr. G. D. Elsdon) for last year it is shown that notwithstanding a fairly large number of adulterated milk samples taken during the year there was only one prosecution. This apparent leniency is explained by Mr. Elsdon as follows: "It is considered that the primary object of this department is to procure a pure milk-supply, and that legal proceedings should only be taken in cases of apparent fraud or where persuasion fails to cause an improvement. For this cause a somewhat new departure has taken place during 1920. A much larger proportion of the milk dealers have been personally interviewed, whilst in cases where farm samples have been unsatisfactory the farms have been visited with the object of finding the cause and, if possible, removing it." The farmers and dairymen have cordially accepted and acted on the suggestions made to them, and have shown their willingness to remedy the shortcomings. When the samples indicate a defective composition of the milk, new samples are taken by what is called an "appeal to the cow," and if the samples thus obtained show a deficiency in fats the farmer is advised as to improvement in feeding his cattle, with the result that frequently there is found an improvement in the quality of the milk. As a result of this novel method of procedure it is stated that "the milk-supply has been permanently improved, and the farmer or dairyman is left with a comfortable feeling that we are not trying to catch him on some technical point, but doing our best for the general public to get the pure milk-supply to which they are entitled."

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the Committee held on August 9th, a sum of £266 was voted to the 17 applicants. The following is a summary of some of the cases relieved:—

Widow, aged 49, of M.R.C.S. Eng. who practised in Hampshire and died in 1921. Owing to continued ill-health applicant's late husband was unable to make provision for his family, and they are now dependent upon the earnings of the son and elder daughter. Unfortunately, the daughter is now out of employment, and applicant and her three children are dependent on the son's money of £1 7*s.* 6*d.* per week. Voted £10.

Widow, aged 55, of M.B. Dub. who practised in Australia and died in 1919. Since husband's death applicant has had to earn her living as a domestic servant, as she was only able to buy herself an annuity bringing her an income of £60 a year. Owing to ill-health she has had to give up service. Her sister allows her 2*s.* 4*d.* a week. Rent £1 a week. Voted £18 in 12 instalments.

Widow, aged 42, of M.R.C.S. Eng. who practised in London and died in 1910. Applicant was left unprovided for, and after the death of her husband went to live with her mother until the latter's death in 1917; since then she has lived with her widowed sister, and they let unfurnished rooms for which they receive 25*s.* per week. Applicant receives £35 per annum from property left by a sister-in-law, also £10 from friends, and £6 10*s.* by acting as a companion for three months. Voted £15 in three instalments.

Daughter, aged 73, of M.R.C.S. Eng. who practised at Tunbridge Wells and died in 1847. Applicant is partially blind and consequently unable to work. Her sole income is derived as follows: £25 from investments, £20 from the Royal United Kingdom Beneficent Association. Rent and rates amount to £28 per annum. Voted £18 in 12 instalments.

Widow, aged 69, of M.D. St. And. who practised in Dover and died in 1911. Applicant has a boarding-house on the East Coast, but owing to heavy expenses and high cost of living she has not made any profit. Apart from letting her only income is £16 per annum from investments. The remainder of her investments she realised to pay the part purchase of the house, and she has to pay interest on a mortgage of £350. Voted £18 in 12 instalments.

Widow, aged 59, of M.R.C.S. who practised in Hampshire and died in 1913. Owing to enforced sale of house to pay off heavy mortgage, applicant has no means and has lived the last few months by selling her jewellery. She pays 15*s.* per week for board and lodging. This case has been referred to the Fund by the Portsmouth C.O.S. Voted £5.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters J. Symonds, C.B., F.R.C.S., 11, Chandos-street, Cavendish-square, London, W. 1.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, Sept. 5th.—2 P.M., Dr. S. Pinchin: Medical Out-patients. Mr. Bishop Harman: Eye Department. 2.30 P.M., Mr. Simmonds: Visit to Surgical Wards.

TUESDAY.—2 P.M., Dr. Burrell: Medical Out-patients. Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Mr. Addison: Visit to Surgical Wards.

WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 2 P.M., Mr. Addison: Operations. Mr. Gibb: Eye Department. Mr. D. Armour: Visit to Surgical Wards.

THURSDAY.—2 P.M., Mr. MacDonald: Surgical Out-patients. Mr. Simmonds: Orthopædic Department. Mr. D. Armour: Operations.

FRIDAY.—10 A.M., Mr. D. Buxton: Dental Department. 2 P.M., Mr. Simmonds: Surgical Out-patients. 2.30 P.M., Dr. Pritchard: Visit to Medical Wards.

SATURDAY.—10 A.M., Dr. Burnford: Visit to Medical Wards. 2 P.M., Mr. Sinclair: Surgical Out-patients.

Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M. In-patient, Out-patient Clinics and Operations.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Wednesday morning of each week, such information for gratuitous publication.*

BRUNTON, G. L., M.D.Edin., has been appointed Medical Superintendent of Nottingham City Asylum.

CALTHROP, LIONEL, C. E., M.B.Durh., M.R.C.S., L.R.C.P., Honorary Physician to the Royal Bath Hospital, Harrogate.

CLULOW, FLORENCE RUTH, M.B., B.S., M.R.C.S., L.R.C.P.Lond., House Surgeon at the King Edward VII. Hospital, Windsor.

MACMAHON, A. D., M.D., B.Ch.N.U.I., Assistant Medical Officer of Health for Wigan.

MITCHELL, A. PHILP, M.D., Ch.M., F.R.C.S.Edin., Surgeon-in-charge of Orthopædic Department, Ministry of Pensions Hospital, Craigleith, Edinburgh.

SHARPE, H., M.R.C.S., L.R.C.P.Lond., Medical Superintendent of King George's Sanatorium for Sailors, Bramshott, Hants (a branch of the Seamen's Hospital Society).

Certifying Surgeon under the Factory and Workshop Acts: KNIGHT, J. I. F., M.R.C.S., L.R.C.P.Lond., for the District of Tisbury, Wilts.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Jun. M.O. £500.
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Bedford County Hospital.—Asst. H.S. £150.
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Bradford Royal Infirmary.—Res. Surg. Officer. £250.
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Freemasons Hospital and Nursing Home, Fulham-road, Chelsea, S.W.—Res. M.O. £250.
Great Yarmouth Hospital.—H.S. £200.
Hospital for Diseases of the Throat, Golden-square, W.—Two Res. H.S.'s. £100.
Hull Royal Infirmary.—Asst. H.S. £150.
Leeds Public Dispensary.—Sen. Res. M.O. £250.
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Manchester Children's Hospital, Gartside-street.—Asst. M.O. £200
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Napsbury Mental Hospital, Napsbury, near St. Albans.—Asst. M.O. £425.
Notts County Council.—Tuberc. Officer. £750.
Oswestry, Shropshire Orthopædic Hospital.—H.S. £250.
Queen Mary's Hospital for the East End, Stratford, E.—Cas. O. £150.
Royal Free Hospital, Gray's Inn-road, W.C.—Female Asst. M.O. in V.D. Dept. £1 1*s.* per session. Cas. O. £100.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.S. £100.
St. George's Hospital, S.W.—Cas. O. £200.
Salford Royal Hospital.—Cas. H.S. £150.

Sheffield, East End Branch of the Children's Hospital.—Female H.S. £150.
Sheffield Royal Hospital.—Cas. O. Asst. Cas. O. Each £150.
Sheffield Royal Infirmary.—Asst. Cas. O. £150.
Stamford, Rutland, and General Infirmary.—H.S. £250.
Sunderland, Durham County and Sunderland Eye Infirmary.—H.S. £100.
Sunderland Royal Infirmary.—H.S. £200.
Taunton, Taunton and Somerset Hospital.—Female Res. Jun. H.S. £150.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Non-res. H.S. £150.
West London Hospital, Hammersmith-road, W.—Two H.S.'s. H.P. Each £100. Surgeon.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Somercotes and at Dunkeld, in the county of Perth.

Births, Marriages, and Deaths.

BIRTHS.

CLARK.—On August 17th, at Bayfield, Kent-road, Southsea, the wife of Dr. A. Erskine Clark, of a daughter.
COVELL.—On August 20th, in Constantinople, the wife (Oona Macleod) of Captain Gordon Covell, M.B., B.S.Lond., I.M.S., of a son.
DUNN.—On August 20th, to Rosamond, wife of G. Hunter Dunn, B.Ch., M.R.C.S., L.R.C.P.Lond., Red House, South Farnborough—a daughter.
HOLT.—On August 16th, at Heightside, Burnley, the wife of Lieut.-Colonel T. Holt, R.A.M.C. (T.F.), of a son.
MANFIELD.—On August 21st, at Cairo, Egypt, the wife of A. H. Manfield, M.R.C.S., L.R.C.P.Lond., of a son.
QUIRKE.—On August 22nd, at Brook House, Ullenhall, Warwickshire, the wife of Major M. J. Quirke, M.B., Ch.B. Birm., I.M.S. (retired), of a son.
REIDY.—On August 22nd, at 314, Commercial-road, E., the wife of J. Reidy, J.P., M.D., of a son.
REVELL.—On August 18th, at 4, Matlock-road, Norwich, the wife of Rowan W. Revell, M.D.Lond., D.P.H., of a daughter.
SCOTT.—On August 24th, at Rose Villa, Jesmond, Newcastle-on-Tyne, to Elsie, wife of J. McAlpine Scott, M.D.Glasg., Pensions Hospital, Shotley Bridge—a daughter.
TERRY.—On August 20th, at Barton-street, Gloucester, the wife of H. Cairns Terry, M.B., Ch.B.Birm., of a son.

MARRIAGES.

WARRINGTON—SAMUELS.—On July 22nd, at St. Michael's Church, Colombo, Thomas Warrington, M.R.C.S., L.R.C.P. Lond., to Dorothy Samuels, daughter of G. Young, Esq., J.P., of Culdaff, and widow of Captain A. P. Samuels, Royal Irish Rifles.
YEOMAN—YEOMAN.—On August 24th, at the Presbyterian Church, Neston, Lieut.-Colonel J. B. Yeoman, M.D., F.R.C.S.Edin., D.P.H., Barrister-at-Law of the Middle Temple, to Ida Isabel, widow of Dr. C. W. Yeoman, and younger daughter of the late Mr. James Fergusson, of Liverpool and Heswall, Cheshire.

DEATHS.

BROWNE.—On August 23rd, at Homewood, Hartford, Cheshire, Robert J. Browne, L.R.C.S. & P.I., L.M., late of the Beach, Hartford, aged 67 years.
DUNN.—On August 22nd, Rosamond, dearly-loved and loving wife of Dr. G. Hunter Dunn, Red House, South Farnborough.
NICOLL.—On August 15th, at Woodside-place, Glasgow, James Henderson Nicoll, M.B., C.M., F.R.F.P.S. Glasg., aged 57 years.
SHACKLETON.—On August 8th, on the voyage from Jamaica, of cerebral hæmorrhage, Thomas Francis Shackleton, M.R.C.S., L.S.A.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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DEVELOPMENT OF MEDICAL SCIENCE IN VIENNA.

BY DR. MAX NEUBURGER,
PROFESSOR OF HISTORY OF MEDICINE AT THE UNIVERSITY OF VIENNA

THE reputation of Vienna as a focus of medical art and medical science reaches far back into the past. Such a reputation could be attained only by the harmonious combination of especially favourable factors—the innate national talent deeply rooted in the ethnological medley of Austria, and self-contained tradition, based on the experience of many generations, yet very susceptible to valuable ideas from abroad and to practical progress on foreign lines. Such cultural predisposition made sure of great development of young men transplanted from other countries. The history of the development of the Viennese school also shows that periods of eminence have always been coupled with liberal reforms in education, in conformity with the spirit of the times, in all branches of sanitary science. Lastly, the unhindered activity of highly gifted and energetic men assisted largely in maintaining the rank of Vienna in the scientific world.

The Vienna University was founded in 1365; ever since the days of humanism there had been certain excellent individual teachers of medicine and anatomy, great lecturers on the science of materia medica or the observation of the sick, but the raising of the entire standard was hindered by narrowness of mental development, opposition to the greater freedom prevalent abroad, the conservatism of the medical caste, a university constitution bound to antiquated routine, and want of the necessary institutes and buildings. Only when the State began to recognise its educational duties was a new epoch opened up.

The Work of Gerard van Swieten.

Gerard van Swieten, physician to the Empress Marie Theresa, who was summoned to Vienna from Holland in 1745, effected a signal work of reform and laid the foundations for the institution of a brilliant school. Provided with almost unlimited authority and energetically combating all opposition, van Swieten improved medical science and liberated university teaching from caste prejudice. He had a botanical garden and a chemical laboratory laid out, arranged the purchase of anatomical preparations, increased the facilities for performing dissections, and took steps to develop the almost totally neglected branches of surgery, obstretrics, and ophthalmology. By increasing both the number and the salaries of professors, by appointing eminent foreign scholars to such positions, and by systematically training a number of capable disciples from among native doctors and students, van Swieten succeeded, in hardly more than two decades, in attaining his object. Leyden, the school at which he himself had graduated, served as his model. The most important achievement, however, whereby this great organiser became the true founder of the Vienna medical school, was the institution of a permanent clinic, after the Leyden pattern, which under the management of Sylvius and Boerhaave came to be held in very great esteem. This small clinic in the "Bürgerspital," containing only six beds for men and six for women, was the first established on German soil, and it became the cradle of the world-wide renown of Austrian medicine.

Anton de Haen.

The first professor of this clinic, Anton de Haen, a former fellow-student of van Swieten's, invited from The Hague in 1754, gained by his medical writings high esteem for his school in the learned circles of Europe, whilst his clinical lectures attracted disciples from far and near. Like van Swieten, he stood for Hippocratism, and opposed the rash adaptation of theories and speculations in pathology. During the 22 years of his professional activity he successfully installed that sober system in which confidence is placed only in observations actually made at the sick bed. He encouraged his students to make diagnoses for themselves, and used post-mortem dissection for purposes of instruction and research. Much of the progress made in the recognition and treatment of illnesses is owing to de Haen, who introduced into the clinic, among other things, the systematic taking of temperatures with the thermometer. Of the disciples of this master, Störck, subsequently imperial physician, was the first to investigate methodically the effect of medicaments in experiments on himself, on animals, and by observation of patients.

Leopold Auenbrugger and Maximilian Stoll.

In the earliest years of de Haen's activity, one of the most important methods of diagnosis—percussion—was discovered by the Viennese doctor, Leopold Auenbrugger, and published in 1761 in a small but most momentous treatise called "Inventum novum." This achievement was not appreciated as it deserved to be until some 50 years later; and then, at first, only abroad. Subsequently, however, Auenbrugger, who had merely been active as a simple practitioner, became a recognised master in Vienna.

Temporarily, though not in an adequate measure, percussion came to be employed at the Vienna clinic before the end of the eighteenth century—i.e., at the time when de Haen's immediate successor, Maximilian Stoll, presided there. This eminent teacher and scholar, who devoted special attention to epidemiology, was recognised in all contemporary reports as the most celebrated clinical teacher then living. His activity was principally associated with the movements towards reform during the reign of the Emperor Joseph II., of which important results still survive.

Medicine under Joseph II.

The most successful of these was the foundation of the "Allgemeines Krankenhaus" (General Hospital), which still exists in commemoration of charity, bearing above its chief portal the words: "Saluti et solatio aegrorum." This famous hospital was opened in 1784; although its prime object was a centralisation of humanitarian institutes, the "Allgemeines Krankenhaus" also served from the very first for purposes of research and instruction through the incorporation of the clinic which was transplanted thither.

A less successful creation was the medical and surgical academy and institute, the "Josephinum," of which the chief object was the training of efficient army doctors, the institute possessing the right of conferring the doctorship of surgery. The institute, founded at the instigation of the imperial surgeon Brambilla, was housed in a very imposing edifice and came into possession of the necessary educational auxiliaries, such as a valuable library and precious scientific collections, the latter including the anatomical preparations in wax fashioned under the supervision of Fontana at Florence. The "Josephinum," opened in 1785, never thrived properly, was forced to close its doors twice on account of reorganisation, and was completely given up in 1873. Although it did not quite fulfil the purpose for which it had been intended, especially in regard to scientific research, it considerably promoted the secondary objects of its founder—i.e., the development of surgery, and the gaining of a better social standing for those that practised it.

The Emperor Joseph, untiring in work for the welfare of the people, knew the shortcomings of the science of medicine, and tried hard to remedy them. He encouraged young men of industry and talent to specialise, and furnished them with means for journeys abroad to this end. The most thorough of the young doctors thus favoured was Johann Boer, who took control of the obstetrical infirmary in 1789, and opened up a new epoch in this branch. Ophthalmology, too, began to develop conspicuously in Vienna, principally represented by Barth, who distinguished himself as a daring operator for cataract and as a master of the technique of injections. Among his scholars Ehrenritter shone as an anatomist, Georg Prochaska as a histologist and physiologist (reflex action, &c.), and Josef Beer as an oculist.

Johann Frank.

The chief representative of the Viennese school, however, at the end of the eighteenth century and the beginning of the nineteenth, was Johann Peter Frank, the founder of public hygiene as an independent science, a brilliant organiser of medical matters, and a gifted clinical professor. The early activity of Frank, whose "Manual of Internal Medicine" was a standard work for decades, had gained him a reputation which reached far beyond the confines of Germany. He united with abundant learning and medical capacity an unusual gift of administration; director of the Allgemeine Krankenhaus and head of the medical clinic from 1795 onwards, he left evidences of creative enterprise which are not yet obliterated. To him the clinic, now enlarged to 24 beds, was indebted for an organisation which has become a pattern. Many contrivances still maintained—e.g., the formal record of the patients' history according to a definite plan; the daily noting of their condition; their alimentation according to four dietary schemes, &c.—had their origin in his time. From the great stock of invalids in the hospital, Frank selected cases suitable for instruction; access to the clinic, and service therein, was exactly regulated; the visitors were divided into spectators and practitioners, the latter having patients who were allotted to them for treatment under supervision and upon whom they had to report to the professor. He also made chemistry and morbid anatomy clinically useful, and founded a pathological anatomical museum, to the control of which Vetter, an eminent assistant professor of anatomy, was appointed. This untiring scholar succeeded in a short time in forming by his own effort a valuable collection of 400 preparations.

The period of Frank's activity comprises many interesting medical events, chief among them being the introduction and official institution of vaccination, for which Ferro and de Carro had spread a lively propaganda from 1799 onwards. Vienna was the first town on the Continent to which Jenner's process found access. Besides the arguments for and against vaccination, the sensational debut of Gall with his theories of the skull agitated medical and non-medical circles at the close of the eighteenth and the beginning of the nineteenth century. It is well known that Gall—like Mesmer, the apostle of animal magnetism some decades earlier—was obliged to quit Vienna to find a more favourable soil for his doctrines abroad.

The First Half of the Nineteenth Century.

With the departure of Frank from his infirmary in 1804, the splendour of the older (first) Vienna school began to fade. After Frank's immediate successor Valentin von Hildenbrand, the author of the best book on typhus in those days (1810), internal medicine had no important official representative in Vienna until almost the middle of the nineteenth century. The political reaction, especially pronounced after the Vienna Congress, was reflected in the fate of the medical faculty, so long, that is to say, as the latter stood under the control of Andreas von Stifft, the omnipotent physician to the Emperor Francis. It was the golden age of bureaucratic decrees in sanitary and educational matters rather than of scientific progress, but again single brilliant representatives of special branches were not lacking. This may be said in the first place of obstetrics, which found a reformer in Boer; and of ophthalmology, two of the teachers of which, Josef Beer and Friedrich Jäger, attracted students from the whole world. Appreciative mention should also be made of the surgeon Kern, who greatly simplified the process of healing wounds; of Bernt, representing forensic medical science, and subsequently of the anatomist Berres, an early representative of microscopical research. A professorship for forensic medicine was founded in 1805, a surgical operating institute in 1807, a clinical ward for ophthalmology in 1812, an ordinary professorship for ophthalmology in 1818—institutions which gave the medical faculty of Vienna a considerable advantage over others.

The autobiographies or memoirs of several celebrated German and foreign doctors tell of youthful impressions gleaned from the scientific and anatomical collections, the infirmaries and hospital wards, in Vienna. The most interesting document of this kind is certainly Wunderlich's little book called "Vienna and Paris," published in 1841. In this work, by the Leipsic professor who was later to become so famous, the Paris school, with all its merits, is described as predominating during the first four decades of the nineteenth century, and then attention is drawn to the almost unnoticed rise of a new school in Vienna, and prophetic allusions are made to the future. After a long stagnation the time had come—so Wunderlich wrote—when "something was again to be learnt in Vienna, and things to be seen there that elsewhere would be sought in vain."

The "Second School" of Vienna.

A characteristic of the new, the so-called "second" school of Vienna was the reconstruction of all medical knowledge on exact foundations. Starting from the achievements of the French, the school of Vienna effected a complete breach with the half-speculative, half-empirical past of medical science, and a rejuvenation of German medicine. The necessary mass of material was found in the Vienna General Hospital, and suitable men appeared to undertake the work entailed.

Rokitansky and Skoda.

The men in question were two young Vienna doctors, Rokitansky and Skoda, both from Bohemia, associated in spirit as they were united in friendship, with common aims and of almost equal age. Rokitansky, who became assistant professor of anatomy at the General Hospital, and curator of the institute of pathological anatomy in 1832 and extraordinary professor two years later, sought to ascertain the causal connexion between certain types of anatomical changes and certain clinical symptoms, and by a whole series of post-mortem examinations to gain an insight into the causes and gradual development of the phenomena of disease. His famous manual, published in the years 1842–46, and almost unparalleled in the literature of the profession in the richness of its contents, completely established the anatomical idea in medicine and made pathological anatomy the basis of the science of healing.

Parallel with Rokitansky's research was the work of Skoda, who served as assistant doctor at the General Hospital from 1833 to 1839, after which he was appointed to the independent control of a section for consumptive patients

in 1840. Skoda was the first to ascertain the physical causes of the origin of the qualities of sound by acoustic experiments and by the study of anatomical conditions; he taught how anatomical alterations, and even the various stages of their development, could be recognised by percussion and auscultation. His "Treatise on Percussion and Auscultation," which appeared in 1839, is a milestone in the history of medicine. Rokitansky's demonstrations and lectures and Skoda's classes for physical diagnosis soon surrounded the two masters with a throng of disciples and adherents who published valuable works in the spirit of their instructors. The second Vienna school was now already an imposing power in the world of science. Amongst the foreigners who came to it for knowledge to last them a whole life-time were men who later themselves became pioneers of science, such as Traube, Kussmaul, or Wilde. The "Gesellschaft der Aerzte" in Vienna, founded in 1838, facilitated the profitable exchange of ideas; in the words of Schönlein, its history was intimately associated with that of medicine in general.

A reform of medical teaching, an up-to-date development of the hospitals and institutes, a reorganisation of university conditions in the way of autonomy for academical authorities, and free choice in teaching and learning were realised during the period from 1848 to 1850. The Conference of German Naturalists and Physicians in Vienna (1856) and the celebration of the 500th anniversary of the university (1865) showed the Vienna medical school at its zenith, containing at one time such names as those of Rokitansky, Skoda, Hyrtl, Brücke, Oppolzer, Hebra, and Arlt.

New specialties of medical science were rapidly developed —laryngology and rhinoscopy by Ludwig Türck, and Johann Czermak; otology by Adam Politzer, whose system of the introduction of air was soon known everywhere under his name; neurology and psychiatry by Türck, and later by Meynert; syphilology by Zeissl and Sigmund; obstetrics and gynæcology by C. Braun, and hydro- and electro-therapeutics by Winternitz and Benedikt respectively. It says much for the sagacity of Rokitansky that he should soon have recognised how much morbid anatomy requires to be supplemented by other branches of science, especially by medical chemistry and experimental pathology. Besides other theoretical professorships (for histology, embryology, and medical chemistry), a chair of "general and experimental pathology" was founded in the 'seventies. The first man to be appointed to it was Stricker, a pioneer not only in research but also in the organisation of instruction with the help of the electric lantern, the microscope, episcope, &c.

It is also worthy of mention that the "Josephinum" in the last stage of its existence numbered some very great teachers among its staff; of these we need only name the pathological anatomist Engel and the two physiologists Carl Ludwig and E. Hering. Several of the professors entered the staff of the medical faculty upon the dissolution of the Josephinum.

The Allgemeine Poliklinik: Theodor Billroth, Bamberger, and Nothnagel.

The circle of academical teachers had considerably increased in the course of decades. Since they could not always find an opportunity to teach in the General Hospital, or the other hospitals, a number of them united in the year 1871 to found a consulting institute called the "Allgemeine Poliklinik," which was also destined to serve purposes of instruction, particularly in certain special branches. The Poliklinik, subsequently enlarged by a small hospital and housed in a building of its own, very soon attracted students and graduates from far and near, and always included in its list of teachers names of the best repute.

When death, old age, or sickness had removed the founders of the second Vienna school and their most intimate co-workers from the stage of scientific life, it was not always possible to find the qualified men for the necessary renovation of the staff of teachers, nor yet to gain new laurels for the school. This was, however, achieved by the appointment of Billroth in 1867. This genius, sufficient in himself alone to gain a university world-wide renown, initiated an illustrious era in surgery. A master of operative technique and a surgical thinker of the highest rank, he was particularly successful in developing the department of intestinal surgery, and founded in Vienna a school of surgery of a very special character and extraordinary importance. His scholars became the ornaments of several universities, and in some of them his doctrines are still active at the present day.

In Oppolzer's successor, Bamberger, internal medicine acquired in 1872 a master of the first order by whom the old Vienna traditions, intensified by means of microscopy and chemistry, were carried on. We are indebted to his endeavours for the appointment, in 1882, of Nothnagel, who proved especially capable of forming a connexion between the German school (of Berlin) and that of Vienna, and who left lasting traces of his long activity. The fact that he was not only an excellent pathological anatomist and experimental investigator, but also devoted much attention to the effect of medicines, gave a clinical therapeutical character to his works, while his intense interest in neurology gave his teaching a general value by which the whole school subsequently profited.

Meynert and Others.

Soon after Bamberger, the number of ordinary professors of the Vienna medical faculty was augmented by the ingenious craniologist, Meynert, the excellent representative of forensic medicine Eduard Hofmann, who left at his death an incomparably fine and extensive museum of medico-forensic preparations, and Hebra's most eminent disciple, the great dermatologist, Kaposi. In the 'eighties we have the appointments of the surgeon G. Albert, of the oculists Eduard Jäger and Ernst Fuchs, of the anatomist E. Zuckerkandl, and of the psychiatrist Krafft-Ebing, who was especially active in promoting forensic psycho-pathology and the doctrines of hypnotism. From 1887 onwards, Max Gruber opened up a new era of hygiene. In 1890 von Schrötter, a master of laryngology, was allotted the newly erected third clinic for internal medicine, handing over the control of the laryngological clinic to his colleague Störk.

Predominance of Virchow and the Berlin School.

There is no denying that at the close of the 'sixties the sceptre of German medicine passed from Vienna to the Berlin school, which, under the guidance of Virchow, was progressing from one triumph to another; the disciples of Rokitansky and Skoda paid too little attention to what had meanwhile been achieved abroad, and continued too long in the old groove, showing great interest solely in morbid anatomy and physical diagnosis. Great innovations like antiseptics and bacteriology were taken up too late by the Viennese sceptics, the introduction was retarded of all those equipments which modern research work and modern sanitary measures require. Nevertheless, medicine in Austria succeeded in the course of the 'nineties in catching up that of Germany, and thenceforth contrived to keep pace with it.

Modern Progress and Conditions.

In this connexion, moreover, one should not forget, when comparing the past with the future, that the age of a universal medical centre, in the sense in which Vienna was formerly a centre, is probably past and gone for ever. Methods of scientific medicine have now become uniform everywhere, and new achievements are rapidly made known from place to place; but Vienna retains one of the leading schools of medicine, of which the achievements during the last 30 years will in the future be recognised as forming a large part of the total medical progress of that period. Great progress has been made at Vienna in the more delicate anatomy, especially that of the central nervous system, in the physiology of the organs of sense, in experimental pharmacology, in physico-chemical biology, in the science of serums, and the doctrines of internal secretions. There is hardly a chapter of internal medicine or pediatrics, of dermatology or syphilology, of neurology or psychology, that has not been enriched from the point of view of diagnosis or therapeutics at one of the Vienna clinics or infirmaries. A number of methods of investigation such as, for example, hæmodynamics, endoscopy, cystoscopy, œsophagoscopy, and rectoscopy, were founded or first practised here. The cutaneous reactions of tuberculin were discovered in Vienna, and electro-cardiodiagnosis is best represented here. A mass of diagnostic and operative technical progress in surgery, gynæcology, ophthalmology (which profited so much by cocaine, first employed in Vienna), and laryngology is connected with the Viennese school, which was also one of the first to raise urology, orthopædic gymnastics, and dentistry to a high scientific level. Rontgen's diagnostics found their chief centre in Vienna. The different forms of physical therapeutics, especially light therapeutics and radium treatment, as well as dietetics, enjoy particular attention here.

Conclusion.

The necessary extension and alteration of the old premises for research and instruction by new institutes, laboratories, and infirmaries, has been widely undertaken, and much has been done within the last two or three decades on the part of the authorities and in the way of private charity by the foundation of nursing homes, charitable establishments, and ambulance refuges. All services auxiliary to medical science have been placed at the service of the public, and war has been energetically waged against tuberculosis, syphilis, alcoholism, occupational diseases, infant mortality, and the decreasing birth-rate. The recent war and the events that followed upon it, the financial calamities of the State, have seriously impeded any great development for the time being, but the soil of medical Vienna is ancient and fertile and cannot be condemned to lie fallow so long as the spirits of humanity and scientific research endure.

UNIVERSITY GRADUATES.

THE preliminary report, just issued, of the Registrar-General gives in convenient form the number of graduates, men and women, of English Universities who were on the Parliamentary electoral register in the spring of the present year :—

University.	Number of electors.		
	Total.	Men.	Women.
Oxford	9,132	8,602	530
Cambridge	10,799	9,061	1,738
London	10,723	8,412	2,311
Combined Constituency ..	3,394	2,574	820
Durham	571	477	94
Manchester	1,388	1,050	338
Liverpool	536	351	185
Leeds	289	220	69
Sheffield	120	105	15
Birmingham	333	233	100
Bristol	157	138	19
Total	34,048	28,649	5,399

AN INSURANCE BROKER.

IT has come to our notice that an enterprising person, calling himself an "Insurance Broker," is calling upon medical men, and inviting their attention to the merits of life policies issued by various insurance companies, adding as an inducement to a medical man to take out the policy that he would be in a position to place a certain number of examinations for life insurance in the doctor's hands. This person then, we are informed, proposes to accept the doctor's first premium on some form of policy agreed between himself and his new client. In a certain number of cases medical men appear to have been so foolish as to have believed that a policy for life, accident, motor-car casualties, and so on, could be taken out in that manner, and to have paid premiums which, never having reached the insurance office, resulted in no policies. In one case a doctor does not seem to have been worried even by this; his worry commenced when he tried to draw compensation for a motor accident. Some medical men had enough knowledge of the world to refuse to part with money in that informal manner, and it was through such a medical man that one of the insurance companies in question found out what was happening, for the inquiry that reached them gave away the deception that was being practised. In some cases the policies have been duly put through, in which cases the medical men found themselves insured, though the companies may not have received the first premiums.

We tell the story to warn our readers against an ingenious and insidious deception which may be offered for their acceptance.

TWO NEEDLESS DEATHS.

Two inquests were held in London recently on the same day upon the bodies of persons who themselves must be held to have been responsible for accidents which proved fatal. In the one, a young man travelling with his friends in a train moving at 50 miles an hour, by way of a joke sat upon the ledge of the open window and fell out backwards. His friends managed to hold him by the feet until the train was stopped, and appeared at the inquest to ascribe blame to the railway officials because the train was not pulled up sooner in response to the communication cord. The deceased, however, was found to have sustained injuries to his head which might have occurred immediately after his fall, and the officials pointed out that at whatever moment the bell may have been rung a train moving fast cannot be pulled up suddenly without danger to all its passengers. The jury expressly found that no blame attached to the servants of the company.

In the other case referred to, a woman living in a flat in Marylebone was being taken up in a lift worked by a girl 15 years of age. When she reached the second floor, where she lived, and before the lift stopped, she herself opened the door on the landing, there being apparently no door to the lift, and began to step out. The lift was then about a foot below the landing, and the girl attendant said that the woman slipped and fell, and that she, the girl, pulled the rope to bring the lift level. Precisely what then happened is obscure, but the lift began to descend instead of rising, possibly because a hurried and more or less lateral pull at the cord had as its result the exerting of vertical pressure in the wrong direction. In any case the unfortunate woman, who was struggling to regain her feet, was caught with her head outside the descending lift and killed. In this case a verdict of accidental death was returned, and though the jury did not blame the girl attendant they added a rider to the effect that they considered her too young to have charge of a lift. It is to be pointed out as to this that young boys and girls are in charge of lifts in very many buildings, that where lifts are not in constant use it is hardly a "man's job," and that even a grown person is not always cooler in an emergency than one 15 years of age. Of course, an older person might have interfered to stop the passenger when she opened the door and tried to get out before she reached the landing, but even this is doubtful. The fault must be looked upon as primarily that of the passenger and she paid a terrible price for it.

No precautions can altogether prevent foolish actions by persons who choose to behave rashly. Some railway companies place bars across their carriage windows. This may cause loss of life for which they would be blamed if in the event of an accident persons trapped in an overturned carriage found themselves unable to escape. There are always dangers to be encountered in otherwise safe conveyances, and not only in trains and lifts, if those using them refuse to be guided by prudence and good sense.

THE REVENUE FROM PATENT MEDICINES.

ACCORDING to a return prepared by the Excise authorities the number of licences issued (at 5*s.* each) to makers or vendors of patent medicines in the year 1920 was, in England, 38,332, and in Scotland, 3339—total for Great Britain 41,671—on which the amount of duty collected was £10,421. These figures show an increase as compared with the years 1917–18–19, but are still below those of pre-war years. The licence duty does not extend to Ireland.

The stamp duty on patent medicines before the war varied from 1½*d.* upwards, according to the price charged for the medicine, but from Oct. 20th, 1915, the rates of duty were doubled, the minimum being fixed at 3*d.* The net receipts from this duty by the revenue authorities for the last ten years have been as under :—

Year.	England.	Scotland.	Total.
	£	£	£
1911	322,696	2,950	325,646
1912	324,861	2,996	327,857
1913	325,420	2,899	328,319
1914	357,750	2,807	360,377
1915	331,033	2,744	333,777
1916	617,879	9,575	627,454
1917	726,894	6,049	733,943
1918	797,366	6,449	803,815
1919	1,056,435	9,259	1,065,694
1920	1,322,654	10,007	1,332,661

ST. THOMAS'S HOSPITAL SAMARITAN FUND.

THE annual report for 1920 of the Samaritan Fund and the activities of the lady almoner's department of St. Thomas's Hospital has now been issued, showing that the work done has covered much old ground, gradually expanding as needs increased. The Samaritan Fund (founded in the year 1852) provides all necessary adjuncts to hospital treatment, such as convalescence, surgical appliances, temporary allowances, fares, extra nourishment, &c. That its assistance has always been of a varied nature is shown by the fact that in the first year's report one of the items of expenditure was the the redemption of tools. The Fund is, unfortunately, small in comparison to the size of the hospital and the needs of its patients, and this year subscriptions, except in special cases, have been unusually small. By means of careful administration and an immense amount of work the Fund has kept clear of debt, and the needs of no patient have been disregarded, but the outlook is not very encouraging.

Subscriptions are urgently needed, together with convalescent letters and free hospitality for patients who are not actually ill but need rest and fresh air. Considerable care is required lest the help afforded by such a fund should tend to lessen the independence of the patient and, in the end, render the family group weaker and less able to stand alone. Therefore, when help is required, be it convalescence, surgical appliances, or nourishment, the first source considered by the almoner is the patient, his family, and relatives, the Samaritan Fund subsidising their contributions. Naturally, such efforts depend on the state of the labour market and other social and economic considerations. During the earlier part of the year 1920 there was comparatively little unemployment, and patients' contributions towards convalescence and instruments amounted to £2984 3*s.* 2*d.*, partly paid in direct sums, partly by means of loans, faithfully repaid. At the end of the year the outstanding loans only amounted to £38 11*s.*, the whole of which will be gradually repaid, and the bad debts came to the negligible sum of £7 6*s.* 2*d.*, the total cost being £5079 7*s.* 8*d.* Of necessity, the patients often cannot repay other forms of assistance. A temporary allowance is given while the breadwinner is laid up in order to free his mind from anxiety and to keep up the standard of living of the family. The amounts granted are based on the family income,

but loans for apprenticeship, tools, and so forth are greatly appreciated, and patients are most honourable in discharging their debts to the hospital. Numerous patients who are assisted in this way do not come under any category for which State aid is forthcoming, a fact which is perhaps not sufficiently realised by potential contributors.

The Samaritan Fund rented beds at various institutions as usual; during the year 1082 patients were sent away, 174 went to "free beds," the remaining 908 costing £2551 2*s*. 1*d*. There is still a great need for more homes for boys from 12 to 18 years, and it is still very difficult to find satisfactory boarding-out centres for the children. Surgical instruments were supplied to 307 in-patients and to 1794 out-patients at a total cost of £2528 5*s*. 8*d*., of which sum patients' payments totalled £1545 16*s*. 11*d*., to which the Samaritan Fund contributed £202 0*s*. 7*d*. There was an increased demand for ambulances and cars; the L.C.C. Ambulance Service is now free for the use of St. Thomas's patients. Much work is done in linking up patients in difficulties with the right sources of help and proper agencies. The report contains detailed accounts of the work of the speech clinic and of the tuberculosis, ophthalmic, maternity, venereal diseases, and physical exercise departments.

THE ÆTIOLOGY OF TYPHUS.

ON the headstone of a grave in Harrow-on-the-Hill Churchyard, at the east end of the tomb on which Byron was accustomed to recline, is the following inscription: "William Felkin Lambert. 4th son of Charles Lambert Eqr. of Fitzroy Sqr. London, who died on the 21st of November, 1825, from typhus fever brought on from sitting in School in damp clothes after [pla]ying at football."

SOCIETY FOR CONSTRUCTIVE BIRTH CONTROL.

THE objects of this Society, the full name of which is the Society for Birth Control and Racial Progress, as stated in the preliminary announcement, are (*a*) to bring home to all the fundamental nature of the reforms involved in conscious and constructive control of conception and the illumination of sex life as a basis of racial progress; (*b*) to consider the individual, national, international, racial, political, economic, scientific, spiritual and other aspects of the theme, for which purpose meetings will be held, publications issued, research committees, commissions of inquiry, and other activities will be organised from time to time as circumstances require and facilities offer; (*c*) to offer to all who still need it the full knowledge of the methods of control. We gave last week the names of medical men and women associated with the work of the Society.

WAR DISABLEMENT PENSIONS.

THE Ministry of Pensions calls the attention of officers, nurses, and men, and widows and dependents of deceased officers and men, who served in the war, to the provisions of Sections 5 and 6 of the War Pensions Act, 1921. In accordance with Section 5, any new claim to pension, grant, gratuity, or allowance in respect to disablement must be made within seven years after the date on which the claimant was discharged, or within seven years after the official date of the termination of the war (August 31st, 1921), whichever date is the earlier. No new claims will be considered after the expiry of the prescribed period. A person is deemed to have been discharged from the service at the time when his active service terminated. Under Section 6 any claimant who desires to appeal against the rejection of a claim to pension must do so within a period of 12 months after the date of the notification by the Ministry, to the claimant, of the rejection of the claim, or after the date of the commencement of the Act (August 19th, 1921), whichever is the later date.

SANITATION IN FLANDERS.

SOME of the more observant visitors to the Belgian battlefield and the pleasant resorts adjacent thereto have been distressed at the absence of sanitary conveniences and the apparently low standard of public hygiene in the disposal of excreta. The question naturally arises whether there is any greater prevalence of excreta-borne disease in West Flanders than in adjacent countries where the hygienic conscience is keener. Trustworthy statistics relating to West Flanders which, it should be remembered, suffered more severely than any other Belgian province during the war, are, however, not available, as the rates based on the estimated population are probably too low. The recorded death-rate from all causes in 1919 was 14 per 1000 of the population. The statistics of notified infectious diseases show an average of about five cases of typhoid or paratyphoid in West Flanders during each ten-day period of the present year. Between August 1st and 10th the notifications were 10 typhoid, 14 diphtheria, 10 scarlet fever. Between June 21st and 30th they were 12 typhoid, 14 diphtheria; and scarlet fever was epidemic. Two cases of epidemic dysentery were notified in the first week of July.

DANGEROUS DRUGS ACT, 1920.

THE regulations made under this Act came into force on Sept. 1st. No person may now have in his possession any morphine, cocaine, or heroin, or any preparations containing at least 0·2 per cent. (one part in 500) of morphine or 0·1 per cent (one part in 1000) of heroin or cocaine, or any medicinal opium, unless he is licensed by the Home Office, or is otherwise authorised by the regulations or by the Home Office, or unless it is supplied on a prescription given in accordance with the conditions specified in the regulations. A few preparations (including Dover's powder and gall and opium ointment) are exempted from the operation of the regulations, copies of which can be obtained from His Majesty's Stationery Office. The existing restrictions in regard to raw opium which have been in force under the Defence of the Realm Act remain, with modifications.

The *Chemist and Druggist* has brought out at the price of 1*s*. a useful wall-card summarising the regulations of the Act. The front contains in addition notes on the various special authorisations and tables showing the limits of safety dilution for salts of alkaloids. On the back are tables giving the proportion of dangerous drugs in various official and unofficial preparations. Finally, simple prescription calculations are added. The card is intended for the use of chemists, but would be equally useful to any dispensing doctor.

WINTER RESORT FOR CHRONIC RHEUMATISM.

To the Editor of THE LANCET.

SIR,—May I ask any of your readers who have experience of Mediterranean or other winter health resorts to advise me as to which places are likely to answer to the following requirements:—(1) Dry, sunny, bracing climate; (2) up-to-date facilities for treatment of chronic rheumatic affections; (3) en pension terms not exceeding £1 per day at quieter hotels; (4) lowest possible duties on imported cigars; (5) a reasonable amount of life and amusement.

Owing to residence in the East, I am unfamiliar with the essential points of difference between the winter resorts of Europe.

I am, Sir, yours faithfully,

August 25th, 1921. I.M.S.

FOREIGN POSTAGE RATE.

THE Postmaster-General complains of the number of insufficiently stamped letters sent to places abroad. These letters are duly forwarded, but are charged on delivery with double the amount of the deficiency, the surcharge being retained by the foreign post office. The prepaid rate of postage on letters from the United Kingdom to British possessions generally, the United States, Tangier, and H.M. ships and troops on foreign stations is 2*d*. for the first ounce and 1½*d*. for each succeeding ounce or fraction thereof. For all other places abroad the rate is 3*d*. for the first ounce and 1½*d*. for each succeeding ounce.

ORTHOGRAPHY IN UGANDA.

THE names in the clinical note on Human Anthrax in Buganda Kingdom, by Dr. W. L. Peacock and Dr. H. Lyndhurst Duke (THE LANCET, August 13th, p. 332) are not misprinted, as some correspondents have hastily assumed. The formation of the words Buganda, Muganda, Luganda, &c., is according to the Bantu language there spoken. The prefixes *Bu*, *Mu*, and *Ba* signify respectively the country, one of its inhabitants, and more than one inhabitant—i.e., the plural form. *Luganda* signifies the language. *Uganda* is the Swahili form, and *Buganda* the Luganda form, of the name of the country. In Luganda the use of prefixes modifies the meaning of substantives in the manner shown as follows: *embuzi*, goat; *gubuzi*, a huge goat; *kibuzi*, a fair-sized goat; *kabuzi*, a little goat; *wambuzi*, Mr. Goat, and so on.

THE AIRMAN'S PHYSIQUE.

THE aeronaut is exposed to various perils. In a recent issue of the *Military Surgeon* Major W. F. Bonner ascribes 2 per cent. of losses of American airmen in the war to enemy action, 8 per cent. to mechanical defects of plane or engine, 90 per cent. to the failure of the pilot himself, which should prove the great responsibility of the flight surgeon, who decides whether a pilot is fit to fly, and a series of tests to help in determining this question is given. In the same journal Lieutenant J. F. Neuberger, senior medical officer at the naval air station on Rockaway Beach, is of opinion that to pilot an aeroplane is a strenuous physical exertion, and that no airman should be accepted for it if under 5 ft. 7½ in., or with less weight than 10 st. 10 lb. His index of measurement is P + p − T, where P is the weight in kilogrammes, p is the chest measure in centimetres, and T is the height, also in centimetres. For the good average flier the figure is −20, but the less the result the better. Light weight is of no advantage to an airman. He is the brain of this delicate, valuable mechanism, and the brain should be, must be, sound. Also he must have great staying power.